

AUSTRALIAN ENGINEERING HIGHER EDUCATION STATISTICS 2009 - 2019

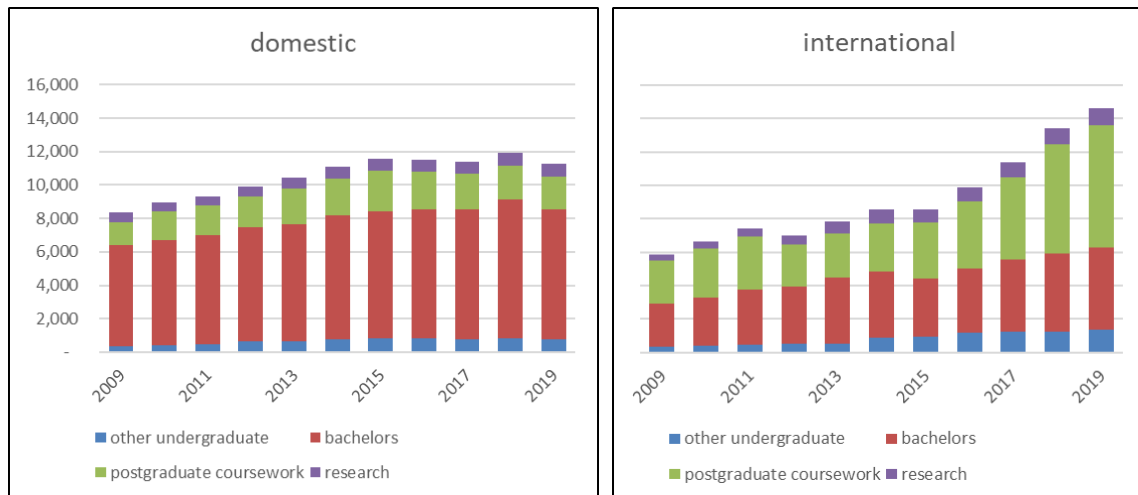
STUDENT AND GRADUATE NUMBERS

PARTICIPATION OF WOMEN

GRADUATE OUTCOMES

STAFF DATA

ACED MEMBER PROFILES



Higher Education Graduations: Engineering & Related Technologies, 2009-19

SUMMARY NUMBERS AND FACTS FOR AUSTRALIAN HIGHER EDUCATION IN ENGINEERING & RELATED TECHNOLOGIES, 2019

SYSTEM SIZE

Total enrolment: 121,980 students – 96.7% at the 36 ACED member institutions

Student load: 81,406 EFTS (effective full-time students) – 98.0% at the ACED institutions

Academic staff: approx. 4,200 FTE (full-time equivalent, excluding casual staff) at ACED institutions.

GRADUATES

qualification level	domestic (% women)	international (% women)
Bachelor degrees (mostly 4-year Honours)	7,729 (16.0%)	4,868 (21.7%)
Postgraduate coursework	1,990 (19.3%)	7,318 (20.4%)
Research (PhD and Masters)	767 (27.1%)	1,010 (25.4%)
Other undergraduate awards	791 (10.6%)	1,398 (13.8%)
TOTAL	11,277 (17.0%)	14,594 (20.5%)

blue/red figures indicate the direction of change >/< compared with 2018

Bachelor degree graduates were distributed approximately as below:

major branch of engineering	domestic (% women)	international (% women)
aerospace (inc. civil aviation degrees)	12% (15%)	13% (32%)
civil engineering	30% (17%)	28% (18%)
electrical & electronics	23% (11%)	26% (16%)
mechanical & manufacturing	19% (11%)	22% (10%)
process & resources (chemical & mining)	9% (31%)	8% (40%)
other (may be underestimated)	7% (no data)	3% (no data)

Approximately six months after graduation, holders of undergraduate awards had:

measure surveyed (during 2020)	engineering	all fields
median salary	\$67,500	\$63,100
full-time employment rate	84.8%	72.2%
graduate overall satisfaction	74.4%	80.1%
employer overall satisfaction	89.9%	84.0%

More than 75% of the bachelor degree graduates in Engineering are likely to have commenced higher education study in the same institution, up to 6 years earlier.

The 89.9% employer satisfaction for graduates in Engineering was the highest of all fields.

COMMENCING STUDENTS

award	domestic (% women)	international (% women)
Bachelor degrees (including Honours)	14,291 (18.6%)	7,058 (17.2%)
Postgraduate coursework	2,254 (19.8%)	9,483 (20.2%)
Research (PhD and Masters)	682 (26.5%)	1,566 (27.6%)
Other undergraduate awards	1,682 (11.8%)	2,013 (13.5%)
TOTAL	18,910 (18.4%)	20,120 (19.0%)

Engineering enrolled 5.8% of all domestic commencing students starting bachelor degrees, continuing the increase from 4.9% in 2017. This proportion was at least 6% prior to 2012.

63.1% of domestic bachelor degree commencers in Engineering were school-leavers – the highest rate of all fields of education. Engineering also has the strongest ATAR profile with nearly 70% these students having ATAR greater than 80.00.

More than 75% of domestic students commencing a bachelor degree in Engineering are likely to complete a degree, in Engineering or in another field.

AUSTRALIAN ENGINEERING: HIGHER EDUCATION STATISTICS

DECEMBER 2020

1. INTRODUCTION

This report and appended data tables are authoritative resources on the current size and performance of engineering education in the Australian higher education (HE) system.

The data cover the field of education 'FoE 03 Engineering and Related Technologies'¹. This includes programs in 'Engineering' as recognised by the engineering profession, and 'Related Technologies' in aviation, maritime, and spatial sciences, including surveying. These areas are commonly provided within engineering faculties and comprise a small proportion of the FoE 03 aggregates. All of FoE 03 is inferred here by the term 'Engineering' unless otherwise explained.

The data cover HE programs at Levels 5 (diplomas) to 10 (doctorates) of the current Australian Qualifications Framework (AQF). Section 2 explains the mapping of these education programs to qualifications that may be eligible for external accreditation by Engineers Australia.

The latest available domestic and international student-related data reported are for academic (calendar) year 2019. These data therefore precede any impact of COVID-19. The data are sourced from the Australian Department of Education, Skills and Employment ('the Department') Higher Education Statistics ('HE Statistics') collections.

Ten-year data and trends are provided for enrolments and graduations, and for the participation of women. Recent year Indigenous enrolments and completions are also provided. For bachelor degrees (including Bachelor Honours degrees), information is provided on student admission profiles, and success, retention and graduation (completion) rates. Selected data for other fields of education and 'All field' aggregates are provided for comparison.

Student, graduate and graduate employer satisfaction, and graduate outcomes data, including employment rates and median salaries, are provided from the most recent national surveys run by the Department's Quality Indicators for Learning & Teaching (QILT) program. Comparisons of Engineering with other fields are provided. The most recently collected data show the early signs negative impact of COVID-19 on short-term graduate employment rates.

Data on teaching loads, including research supervision, academic staffing for Engineering are provided. However, research performance (such as competitive grants, publications and engagement) are not included in this report.

HE Statistics data are compiled from information supplied by educational providers. For Engineering, most of these are the 35 public universities that are members of the Australian Council of Engineering Deans (ACED). Private HE providers and the Vocational & Training (VET) sector contributed less than 1% of the HE awards completed in Engineering in 2019. While complying with the Department's submission requirements, providers do not report their data to the same level of detail with each other. Inconsistencies that impact on data accuracy and interpretation are noted in the text.

The Tables in the Appendix contain further details to support the body of the report. Tables 14-16 provide summaries of enrolment aggregates, female participation, graduations, teaching load, and programs offered by ACED members.

¹ The Australian Standard Classification of Education (ASCED) defines 11 Fields of Education, plus 'Mixed-Field programs'. See Appendix 1, Table 17 for the list of subfields in FoE 03 and FoE 02 Information Technology.

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Australian Council of Engineering Deans Inc.

The membership of ACED is a senior academic representative of each of the 35 Australian universities that provide professional engineering degrees accredited by Engineers Australia.

ACED's mission is to promote and advance engineering education, research and scholarship on behalf of the Australian higher education system.

Position papers and reports are on the ACED website: www.aced.edu.au

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2. AWARD LEVELS AND EXTERNAL ACCREDITATION BY ENGINEERS AUSTRALIA

Higher education programs in Engineering and Related Technologies are delivered at Level 5 (Diploma) through Level 10 (Doctorate) of the Australian Qualifications Framework (AQF)².

Australian higher education providers are regulated by the Tertiary Education Standards and Quality Agency (TEQSA) and must align their programs with the level specifications and descriptors of AQF. All of the Australian universities that are members of ACED are 'self-accrediting' institutions: they have the power to offer educational awards in the fields covered by their TEQSA registration.

Providers of engineering programs also align their programs to the needs of the engineering profession.

Engineers Australia (EA) accredits³ programs that deliver the educational qualification for entry to supervised practice in three occupations: professional engineer, engineering technologist and engineering associate (senior technicians), as listed in the following table:

Occupation and EA membership category	Award (minimum full-time equivalent academic years of study, post-secondary school)	AQF Level	International Accord
Professional Engineer	Master (coursework) (5 years)	9	Washington
	Bachelor Honours (4 years)	8	
Engineering Technologist	Bachelor (3 years)	7	Sydney
Engineering Associate	Associate Degree (2 years)	6	Dublin
	Advanced Diploma (2 years)		

EA specifies the accreditation standards as a set of 'graduate competencies' for each occupation, known as the 'Stage 1 Competency Standard'. These are benchmarked against those of the educational accords of the International Engineering Alliance (IEA)⁴. The EA accreditation process evaluates programs – specifically their delivery of the graduate competencies – against criteria covering the academic program design and implementation and the provider's operating environment and quality assurance processes. Accreditation covers programs for up to five years from the year of evaluation.

Graduates of EA accredited programs are deemed to have met the Stage 1 Competency standard for the applicable occupational category, and thereby meet the required educational requirement for graduate membership of that occupation. Their qualification is also recognised as equivalent (in terms of educational outcomes) to those of the other signatories of the corresponding Accord.

Three matters that impact on the interpretation of the data in this report require further explanation:

- (i) Since 1980, EA has required the accredited professional engineer qualification to be of **at least four full-time study years' duration** (or part-time equivalent) following completion of a Year 12 secondary school certificate. From 1980 to 2013, the majority of graduates at many universities were awarded their 4-year degree 'with Honours', based on merit. Since 2014, providers have been required (for compliance with the Australian HE Standards) to configure their four-year degrees as 'Bachelor Honours Degrees' as defined in AQF Level 8. **The BEng(Hons) is therefore the 'standard' degree for entry to professional engineering practice in Australia.** Any class of level of Honours is awarded on merit. Most of the data provided in this report aggregates 'bachelor degree'

² Changes to the Australian Qualifications Framework are currently under consideration by the Commonwealth government. This report uses the 2013 AQF classifications in force in 2019. See <https://www.aqf.edu.au/>

³ Engineers Australia's program accreditation process and criteria and the lists of accredited programs can be accessed at <https://www.engineersaustralia.org.au/About-Us/Accreditation>

⁴ The IEA is a self-governed international organisation of bodies that each has their jurisdiction's responsibility for accreditation of engineering qualifications and standards of engineering practice. As at January 2020 the Washington Accord has 20 full signatories. The Sydney and Dublin Accords have 11 and 9 full signatories respectively. See <http://www.ieagrements.org/>

numbers to cover awards at AQF Levels 7 and 8. The Appendix Tables 15 and 16 list ACED members' provision of programs at these two levels.

- (ii) Until the mid-2000's, coursework Master degrees (AQF Level 9) in engineering were offered primarily to qualified professional engineers to **advance** their engineering and technical knowledge. These degrees **were not accredited** by EA.

Since the 2000's, most of the Australian university providers and some private providers have developed '**entry-to-practice Master degree**' programs that are aimed at domestic⁵ and international bachelors graduates with suitable engineering science degrees and other prior qualifications. These programs are eligible for accreditation by EA to the Professional Engineer standard. The aggregated data for Master (coursework) graduates presented here includes numbers for both types of master degree programs. Appendix Tables 15 and 16 provide data on the numbers of programs and branches of engineering covered for each ACED member.

- (iii) Research degrees (doctorates and Master degrees at AQF Levels 10 and 9, respectively) are not considered by EA for external accreditation. However, some summary data presented here is aggregated across all master degrees.

These overlaps in award designations and data classifications thus make it impossible to use national data aggregations to provide exact answers to questions like: '*How many domestic students were awarded an accredited Professional Engineering qualification in a given year?*', '*How many domestic engineering professionals are taking an advanced master degree?*', or '*How many graduates in Civil Engineering were there in a given year?*' The report does, however, provide estimates and comments on such points.

Some ACED members provide HE programs at AQF level 6, mostly as Associate Degrees. These, and some Advanced Diplomas, may be eligible for EA accreditation if they meet the education requirements for the Engineering Associate occupation. Appendix Table 15 lists the ACED providers of accredited programs at this level. The student enrolment and graduation data for programs at this level includes data for programs that are not aimed at this professional or occupational outcome but are intended primarily as pathways to bachelor degrees.

Vocational education and training (VET) providers offer awards in Engineering primarily at AQF Levels 3 to 6. The lower of these levels are qualifications for engineering trades, the higher ones for engineering technicians. Most programs offered by the VET sector follow a competency-based education and training model, rather than the curriculum model used in higher education. Competency-based Advanced Diplomas in Engineering may be eligible for consideration by the EA accreditation process at the level of Engineering Associate. Information on these awards is not provided in this report.

⁵ Notably, the University of Melbourne and The University of Western Australia ceased offering 4-year bachelors degrees to commencing students in the 2000s. They have adopted a '3yr BSc +2yr MEng' engineering qualification model.

3. AWARD COMPLETIONS (GRADUATIONS) IN ENGINEERING AND RELATED TECHNOLOGIES

3.1 Graduations by award level

The total numbers of graduates by award level over 2009-19 are provided in Appendix Table 1.

Figure 1 summarises these numbers in four broad qualification levels: research (doctorate by research and research Master degree), postgraduate coursework, bachelors, and other undergraduate awards (Associate Degrees, Advanced Diplomas and Diplomas).

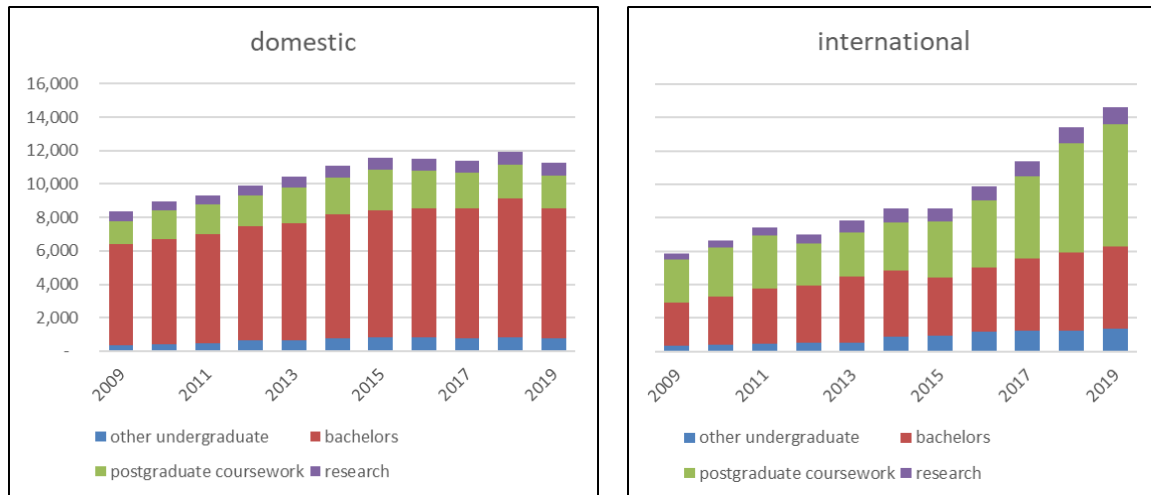


Figure 1 Domestic and international student graduations, 2009-19

It is clear that the total number of graduations by international students overtook domestic graduations in 2018. The international figures include those from offshore campuses or partnerships with ACED member universities. The offshore programs accredited by Engineers Australia are listed in Appendix Table 16(b).

3.2 Graduations 2019: key points and trends

(i) *PhDs and research Master degrees (domestic: 767; international: 1,010)*

- Graduations from research degrees have **more than doubled** over the decade, predominantly from the **quadrupling** of international PhD graduates. The latter have constituted the majority of research graduates since 2013.
- Research graduations by women have increased steadily, although the proportion of Australian women dropped to 27% in 2019, from 30% in the previous year. The corresponding rate for international students has fluctuated around 25% for eight years.
- In 2019 Engineering had more than **11% of the total domestic** research degree graduations, and **24% of the international** research degree graduations (not including doctorates by coursework), across all fields of education.

(ii) *Postgraduate coursework (domestic: 2,067; international: 6,584)*

- International student graduations from Master degrees continued to increase, with the **doubling of international graduates since 2015**. This sub-cohort grew by 10% to 7,185 in 2019, largely from accredited entry-to-practice Master degrees.
- Domestic Master degree graduations have declined since 2016. Nearly half (709 of 1,477) of the domestic graduations from entry-to-practice Master degrees were from The University of Melbourne and The University of Western Australia. These universities have contributed strongly to the **increased proportion (19.3%) of Australian women** completing postgraduate coursework degrees. A small number of other universities are offering BEng(Hons) MEng combinations that enable students to extend their engineering program in a chosen area of specialisation. These trends indicate long-term decline in the numbers of practising professional engineers taking a full-advanced Master degree.

- The number of Graduate Certificates and Graduate Diplomas awarded to domestic students increased slightly in 2019, to 513. These awards are most likely to be exit points from advanced Master degrees programs taken by practising professionals.

(iii) Bachelor degrees (domestic: 7,729; international: 4,868)

- The 2019 international total was the **largest on record**, superseding the 2018 record. The domestic total declined to significantly to last year's peak to just above the 2017 figure.
- The totals include 524 domestic and 486 international graduates of 3-year degree programs (see Appendix Table 2). Many of these are from non-engineering degrees, such as civil aviation. Some the engineering graduates at this level are likely to use their 3-year qualification as credit in articulating to a professional engineering degree.
- Approximately one third of the domestic bachelor degree graduates taking programs of at least 4-years duration are on programs of >4 years duration (Appendix Table 2). Only 7% of international students take these programs. They may be a 'dual', 'double' or 'combined' degree program for which graduates gain an **additional** bachelor degree award for study in another discipline (typically science or business), a **co-op program** in which students gain an additional award for industry-based study, or a **BEng(Hons), MEng combination**. This is discussed further in Section 10.
- The proportion of **Australian women graduating with a bachelor degree reached 16.0%** for the first time. Following the established trend, the **proportion of international women graduates was about 5% higher**.

(iv) Other undergraduate (domestic: 791; international: 1,398)

- Associate Degrees and Advanced Diplomas were awarded to more than 600 students for the eighth consecutive year. Consistently, 75-80% of this total are domestic graduates. Many of the engineering graduates at this level use this qualification to articulate into professional engineering degrees.
- In contrast, 80% of the graduates of **engineering diplomas and enabling programs** were international. Many of these graduates will articulate to enrolments in bachelor degrees as discussed in Section 5.4. As reported in previous years, there may be more students on enabling (foundation) pathways, but who are not assigned by their provider to the Engineering field of education.

(v) Professional Engineering qualifications

- From these data and other information, it is estimated that approximately 8,000 domestic students and 10,500 international students graduated from an accredited BEng(Hons) or an entry-to-practice Master degree in 2018.

3.3 Bachelor degree graduations by branch of engineering

Appendix Table 2 provides details of bachelor degree graduations for 2019, by duration and 4-digit code sub-classification of Engineering & Related Technologies. These data provide some insight into the relative attractiveness of the main branches of engineering taken by domestic and international students. Figure 2 presents indicative trends⁶.

Key points:

- (i) for domestic students, the proportion of civil engineering graduates increased slightly in 2019, while the increase in electrical/electronic engineering was balanced by decreases in the proportion graduating in the mechanical engineering group, and in 'process and resources'⁷;

⁶ These data are not definitive because several universities report their graduations against two generic ASCED codes (0300 and 0399). The trends shown assume that the universities that do report against the 4-digit codes are representative of the system as a whole. See Appendix 1 Table 2. Table 15 and 16 list the branches of engineering offered by ACED members.

⁷ This combination includes Chemical Engineering and Mining Engineering.

- (ii) for international students, civil, mechanical and electrical/electronics engineering graduations each continue to graduate about 25% of the cohort;
- (iii) The recent increases in graduations in the aerospace category for both domestic and international students are primarily in civil aviation, mostly 3-year degrees taken in association with gaining a commercial pilot licence.

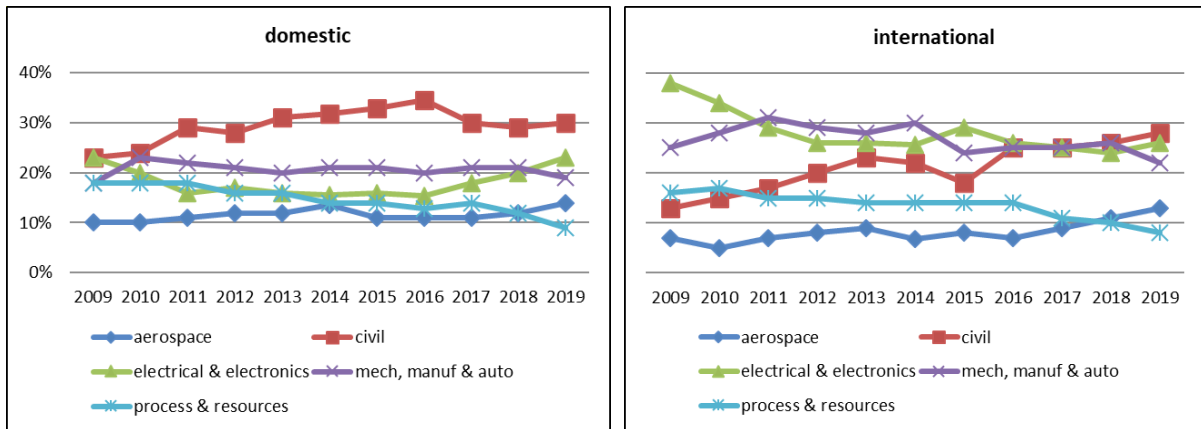


Figure 2 Indicative distributions of bachelor degree awards by branch of engineering, 2009-19

With more universities and other providers offering accredited entry-to-practice Masters degrees and a wider range of engineering areas, further data collection and analysis are needed to determine more accurately the trends in graduations by engineering branch, for both domestic and international cohorts.

4. TOTAL ENROLMENTS AND STUDENT LOAD

4.1 Total enrolments

The data by detailed award level provided in Appendix Table 3, are summarised in Figure 3 for the broad award level categories. Total enrolments are the cumulative result of student commencements (Section 5) and successful progression and retention in their programs (Section 6).

The overall growth to nearly 122,000 students in 2019 is entirely from international enrolments, although their total (56,065) increased by only 5% from 2018. The largest component of the increase is in postgraduate coursework degrees. International bachelor degree enrolments appear to be peaking.

Total domestic enrolments (65,915) dropped slightly from the 2018 figure, due to decreases in research and postgraduate enrolments; bachelor degree numbers increased slightly.

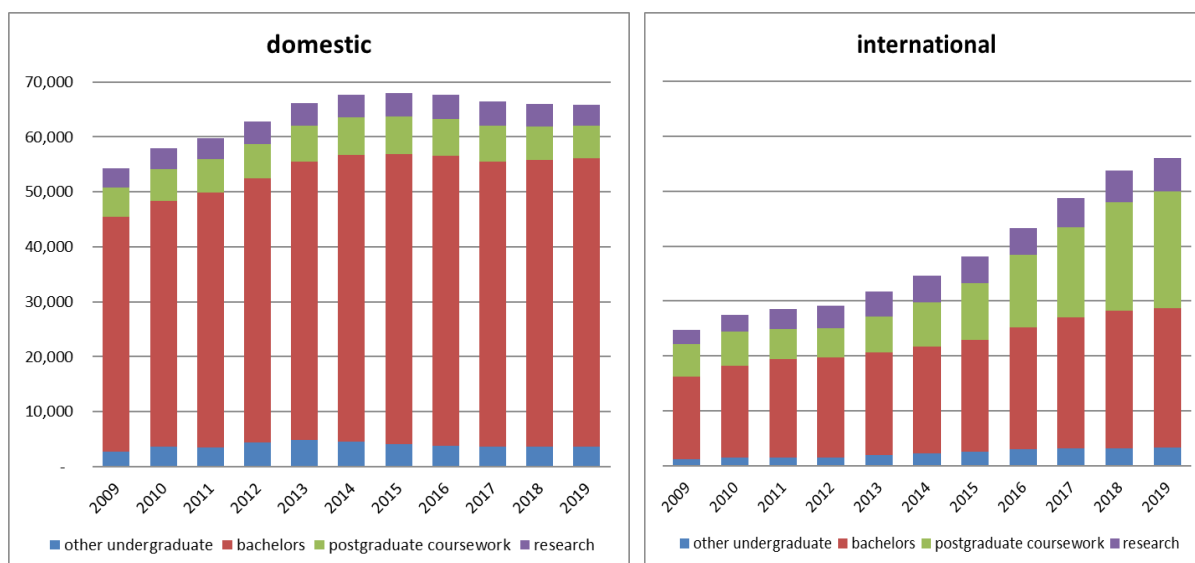


Figure 3 Domestic and international student enrolments, 2009-19

4.2 Student load

The funding formulae used by most providers for teaching and research training are based on 'taught student load'. This is also the basis of the Commonwealth Support Grant to providers for applicable programs, including bachelor degrees. The unit of measurement is one 'effective full-time student (EFT)' in the identified field of education.

The following table summarises the total load for the Engineering & Related Technologies field over the last four years:

cohort year	doct- orate	master	other p/g	bachelor	other u/g	enabling	non- award	total
domestic 2016	2,695	3,249	546	34,783	1,455	7	51	42,787
domestic 2017	2,721	3,164	469	33,730	1,437	5	61	41,587
domestic 2018	2,514	2,888	457	33,545	1,390	3	45	40,839
domestic 2019	2,257	2,700	515	33,969	1,420	17	59	40,936
% change from 2018	-10.2%	-6.5%	12.7%	1.3%	2.2%	466.7%	31.1%	0.2%
total 2016	6,440	13,264	662	50,828	2,600	7	723	74,525
total 2017	6,661	15,714	594	51,272	2,659	5	378	77,284
total 2018	6,786	17,813	563	52,055	2,512	3	358	80,089
total 2019	6,721	18,351	664	52,597	2,639	17	420	81,406
% change from 2018	1.0%	3.0%	17.9%	1.0%	5.1%	466.7%	17.3%	1.6%

The load attributed to **non-university providers** in 2019 was 1,420 EFTs, less than 2% of the total, a similar proportion to previous years.

The international student load can be calculated as the difference between the total and domestic load, for each corresponding cell. It is evident, and not surprising, that the balance of load is following enrolments and is shifting towards international load. Total load increased by 1.6% from the previous year, mostly from the growth in international students in masters (coursework) degrees.

Earlier year load totals, and the 2019 detailed data for 4-digit ASCED sub-codes (corresponding to the branches of engineering) provided in Appendix Table 4.

Assuming all the 2019 load is attributed to teaching and supervising Engineering students⁸, the 81,046 EFTs load is generated by the 121,980 enrolled students. Hence, on average, and as for previous years, each Engineering student represents approximately two-thirds of one EFT for teaching load. The difference between this number and parity is due to part-time student enrolment and the contribution of teaching load from other academic areas into engineering programs. Most of the latter is 'service teaching' of mathematics, science and computing into the first two years of undergraduate engineering programs.

In Section 9.3, the load data are combined with staff data to estimate the overall student-staff ratio for engineering teaching and research training undertaken by the ACED members' faculties and schools.

⁸ This is a reasonable assumption, since few engineering course units are taken by students enrolled in other fields of education.

5. COMMENCING ENROLMENTS

5.1 Commencements by award level

Each graduation is preceded by a commencing enrolment. Figure 4 shows the trends for the broad award commencing student numbers levels over the past decade. Details are in Appendix Table 5.

Clearly, the recent international commencement growth has underpinned the overall growth of engineering enrolments discussed in Section 2. While 2019 had a slight drop in international commencing enrolments, these continued to constitute the majority of all commencing enrolments for the third year.

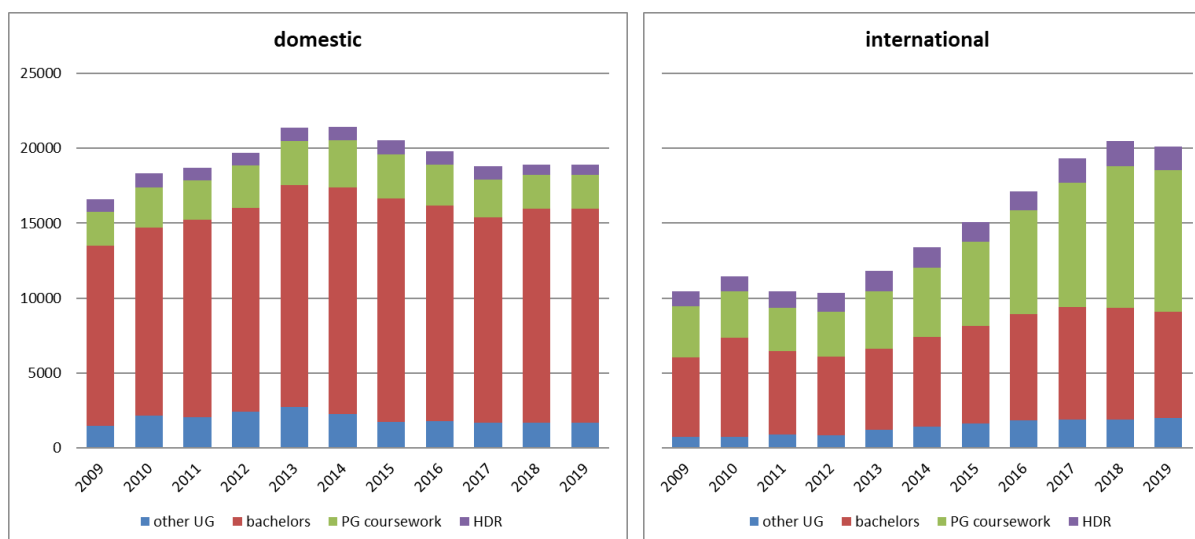


Figure 4 Domestic and international student commencing enrolments, 2009-19

Further comments on 2019 data and trends:

(i) PhDs and research Master degrees (domestic: 682; international: 1,566)

- Small decreases in domestic PhD and research Master commencements confirm the **declining** aggregate trend from the 2015 peak of 971. Domestic research Master commencements have more than halved since 2014.
- International PhD commencements **decreased by 134**, while the research Master commencements **increased by 21**. The latter have been quite variable, but less than 211 since 2013.

(ii) Postgraduate coursework (domestic: 2,255; international: 9,483)

- International commencements into coursework Master degrees were the same as in 2018, following more than a decade of annual increases, and doubling between 2014 and 2018. The majority of these enrolments are into entry-to-practice Master degrees that are eligible for accreditation by Engineers Australia.
- In contrast, domestic commencements into coursework Master degrees fell to 1,646 continuing a declining trend. This category includes approximately 600 enrolments into the professional engineering degrees at the University of Melbourne and The University of Western Australia. The aggregate data corroborate the other evidence decreasing take-up of advanced coursework Master degrees and postgraduate diplomas and certificates aimed at practicing engineers, although the commencing numbers in the postgraduate diplomas and certificates did increase by 20% to 609.

(iii) Bachelor degrees (domestic: 14,291; international: 7,058)

- Annual total commencing enrolments into bachelor degrees have been fairly constant since 2014. In 2019 there were **slight increases in domestic commencing** enrolments and in the share of total domestic undergraduate commencing enrolments, discussed further below.

- The **decrease in international** commencing enrolments is probably a result of increased local provision of bachelor degrees in countries from which Australia previously drew enrolments and that are now Washington Accord signatories, and the increasing preferences of international students with local non-accredited degrees to take the 2-year entry-to-practice coursework Master degree pathway to a professional engineering qualification.

(iv) Other undergraduate (domestic: 1,682; international: 2,009)

- Commencing domestic enrolments in Associate Degrees and Advanced Diplomas was 995 in 2019, down slightly from the 2018 figure, but much less than the 1,890 in 2013. The 307 international commencements in this category were the highest on record and 50% greater than that in 2014.
- Domestic and international commencing enrolments into 'Enabling and Other' programs in 2019 increased on the previous year. The number of international enrolments in this category (1,706) has increased steadily since 2013. These programs are intended to provide pathways into engineering degrees.

5.2 Participation of women commencing engineering awards in 2019

Overall, the 2019 proportion of domestic women commencing any award program in engineering was the highest on record at 18.4%, continuing the slowly increasing trend shown in Figure 5. In contrast the 19.0% figure for international students was lower than those for the previous four years.

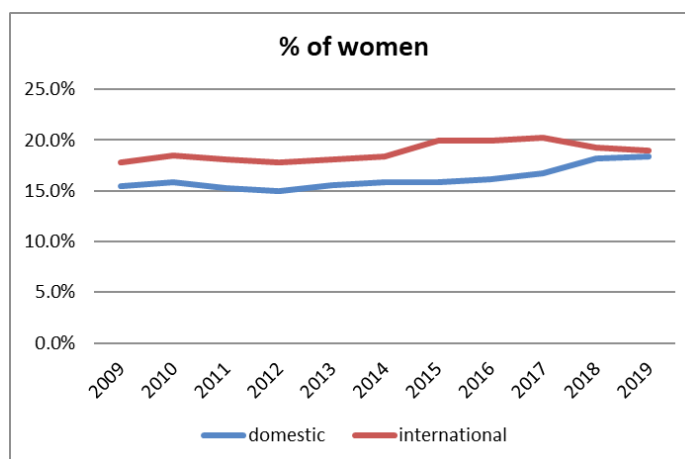


Figure 5 Proportions of women in the domestic and international commencing student cohorts, 2019-2019

These broad trends mask differences in the participation of women by award level, branch of engineering, and institution. The following points elaborate on the data provided in several tables in the Appendix,

- Relatively few women commence higher education study in engineering via Associate Degrees and other sub-degree qualifications. In recent years, both the domestic and international cohorts commencing these awards have **about 5% fewer women** than are in the corresponding bachelor degree cohorts.
- The proportion of women in the **domestic commencing bachelor degree cohort has increased each year, from 13.7% to 18.6%** over 2012 to 2019. The 2019 figure is the highest on record. A higher proportion of women than men (68.5% vs. 61.9% overall) enter on the basis of their secondary school completion (see Section .5.4).
- The equivalent proportion in the international cohorts has varied between 17.1% and 21% over that period. The figure in 2019 dropped to 17.2%, following a similar decline in the previous year.
- Domestic and international commencements by women **constituted 20.7% and 20.2% respectively of the 2019 coursework Master degree cohorts**. The domestic figure is the same as 2018, and more than 1% higher than any previous year.

- Research degrees in engineering have had **consistently higher rates of participation** by women than other categories of engineering qualification. In 2019, women were **29.5% and 27.5% of the domestic and international commencing PhD enrolments**, respectively. The corresponding figures for research Master degrees (with small numbers) were 21.7% and 20.2%.
- These average figures conceal considerable variation by **institution**, reflecting its **location, size, history and program mix**. Appendix Table 14 records the proportions of women in the commencing domestic and international cohorts for ACED members. For institutions with at least 100 commencing students in either cohort category, the female participation rates range from **9.2% to 31.7% (domestic)** and **8.0% to 34.4% (international)**.
- The participation of women across the **branches of engineering** cannot be deduced reliably by commencing enrolment data, not least because many institutions do not require bachelor degree students to confirm their choice until second year. The relative attractiveness of each major branch to women may however be deduced from **graduation** data. From the undergraduate qualifications (Appendix Table 2), the proportions of graduating women in each branch in 2019 were approximately:

major branch of engineering	domestic (% women)	international (% women)
aerospace (inc. civil aviation degrees)	15%	32%
civil engineering	17%	18%
electrical & electronics	11%	16%
mechanical & manufacturing	11%	10%
process & resources (chemical & mining)	31%	40%
All Undergraduate)	16.0%	21.6%

These data confirm the general observations that women have strong(er) rates of participation in chemical engineering and civil engineering than in mechanical and the electrical engineering group. Areas that are also known to have strong participation by women, such as biomedical engineering and environmental engineering, are not explicitly included in this Table. Note also that most international graduations in the aerospace branch are from 3-year degrees in civil aviation, rather than in engineering.

5.3 Domestic commencements in Engineering compared with other fields of education

Figure 6 (from data in Appendix Table 8) records the numbers of domestic students commencing HE awards in several fields of education, for all award levels. The grand total (408,222) in 2019 was slightly less than in 2018.

In 2019, the proportion of commencing domestic enrolments in Engineering & Related Technologies **increased to 4.7%** (from 4.6% in 2018) of the total domestic commencing enrolments for all fields of education and all award levels.

The proportions of commencing domestic enrolments in Natural & Physical Sciences decreased to 8.9% (from 9.0% in 2018) but increased in Information Technology to 3.8% (from 3.6% in 2018).

The proportion of **domestic bachelor degree commencements in Engineering** amongst all fields of education **increased to 5.8% in 2019**, from 5.7% in 2018, following its lowest ever value of 4.9% in 2017 (see Appendix Table 7).

The other STEM fields increased their shares in 2019, while those in Health and non-STEM fields decreased. Note that the Bachelor of Science commencements at the two universities that no longer enroll school leavers into undergraduate engineering include students who will ultimately graduate with an accredited Master degree in engineering

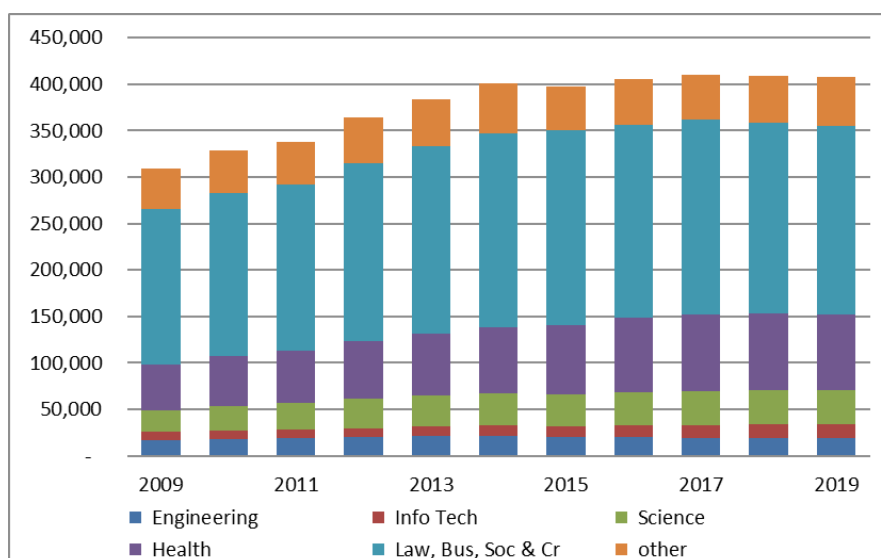


Figure 6 Domestic commencing enrolments (all award levels) in selected fields of education, 2009-19

5.4 Domestic students: entry paths into bachelor degrees and ATAR bands

Detailed data on commencing Engineering students' 'basis of admission' are provided in Appendix Table 8(a). The last four years' data are provided here, with the 2019 distributions shown for 'All students' and for women:

basis of admission	domestic commencing Engineering students				
	2016	2017	2018	2019 (All)	2019 (Women)
completed secondary school	57.9%	61.6%	63.4%	63.1%	68.5%
VET/TAFE	7.3%	6.1%	6.1%	6.3%	4.2%
higher education	23.1%	21.7%	21.0%	21.0%	19.7%
other	11.7%	10.2%	9.4%	10.0%	7.7%

These patterns of admission have been quite stable over about seven years. Nearly two-thirds (63.1% in 2019) of commencing students were admitted to engineering bachelor degrees on the basis of their secondary school completion. The proportion admitted on the basis of a VET qualification (probably gained from the TAFE sector) was 6.3% in 2019. The proportion entering on the basis of a HE qualification (such as an Associate Degree or Enabling Diploma) or as a transfer from another institution has stabilised to about 21%.

The final column in the Table above shows that relatively more women enter on the basis of completing secondary school, and relatively fewer have a VET qualification. Given the low participation of women in VET engineering qualifications this may imply that a quite high proportion of those who do complete VET choose to progress to HE.

The published data on undergraduate admissions and offers shows the distribution of **offers by ATAR band** for the applicant student cohorts for all fields of education. The 2019 shares are presented for Engineering and selected other fields in Appendix Table 8(b), and in Figure 7.

As in previous years, **Engineering had the strongest 'ATAR profile' of all fields**⁹ (including those not shown), on the basis that it is the field with the highest proportions (41.7%) of offers to candidates with ATAR greater than 90.00 and 27.3% (with Science) for candidates with ATAR in the 80.05 – 90.00 band. Engineering also has the lowest proportion of those with ATAR less than 60.05). Engineering is the field with the **highest proportion of offers** (57.6%) made on the basis of ATAR. It is surely an urban myth that taking Engineering is 'wasting a good ATAR'.

⁹ The sub-fields of Medical Studies, Dental Studies and Veterinary Studies within Health have stronger ATAR profiles, but much smaller enrolments than Engineering.

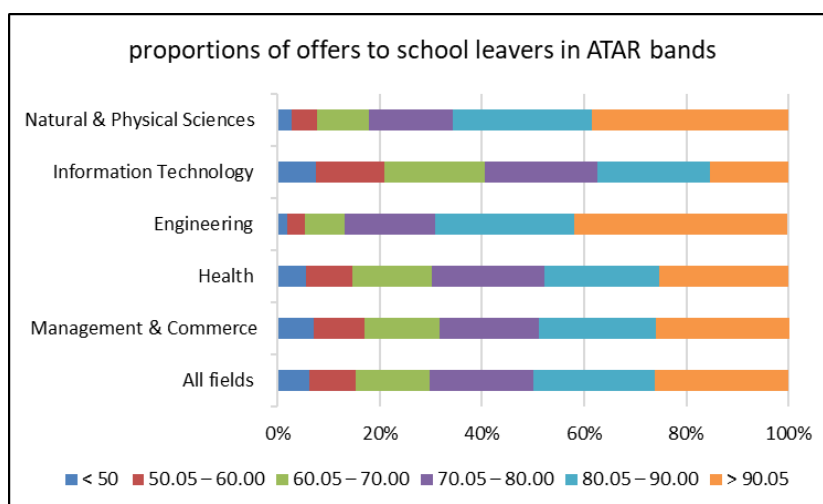


Figure 7 Proportions of offers in decadal ATAR bands made to school leavers in selected fields, 2019

5.5 Countries of origin of onshore international students

The top sixteen countries providing onshore international students are detailed in Appendix Table 9. The top eight countries contributed 80% of onshore international commencers.

As in previous years, China (excluding SARs and Taiwan), India, Pakistan and Sri Lanka filled the top four spots overall, accounting for nearly 70% of commencers. In addition:

- India retained top place for the number and proportion of growth of postgraduate commencers, up to 3,380 (37.5%) in 2019.
- Nepal has moved up the 6th place, largely by virtue of the large number of postgraduates.
- Malaysia has moved down the list from 5th in 2018 to 8th in 2019.

The corresponding data for 2020 and subsequent years are likely to change significantly, due to the COVID-19 pandemic.

6. COMMENCEMENTS AND COMPLETIONS BY INDIGENOUS STUDENTS

Indigenous students enrol and graduate from Engineering & Related Technologies in small numbers. The following table shows the national figures for commencements and completions in broad award categories over 2015-19:

	P/G by Res'ch	P/G C'rsewk	Bachelor (inc Hons)	Other	Total		
	Persons	Persons	Persons	Persons	Male	Female	Persons
Commencements							
2015	< 5	12	108	23	124	21	145
2016		12	102	20	115	19	134
2017		21	143	18	146	36	182
2018		17	120	22	128	31	159
2019	16	137	38	156	35	191	
Completions							
2015	< 5	11	34	< 5	43	6	49
2016		7	38	10	51	4	55
2017		8	34	8	45	5	50
2018		6	52	<5	53	8	61
2019	8	37	13	46	12	58	

The commencing Indigenous student numbers in bachelor degrees in Engineering show an increasing trend over the past five years. In 2019, they constituted less than 1% of the commencing domestic bachelor degree. The comparable figure for Health is 3.4%.

Completion numbers in Engineering indicate relatively high attrition, and completion rates of around 40%. The 2019 graduates from bachelor degrees would have commenced study during 2013-16.

Appendix Table 10 breaks down data for 2015, 2017 and 2019 by State and Territory. Queensland has consistently enrolled and graduated the largest numbers of Indigenous students, followed by New South Wales.

7. BACHELOR DEGREES: SUCCESS, RETENTION, COMPLETION RATES

The data appendices of previous editions of this report have included considerable detail on the year by year success and retention rates for bachelor degree students. Data at this level of detail have not been collected for the past two years, following the inclusion of visual analytics for Attrition, Retention and Success Rates on the HE Statistics website.

7.1 Annual success rates

The success rate is defined as the proportion of courses (units of study) passed by a cohort of enrolled students in a given year. The following Table provides the 2018 and 2019 rates for domestic and international students enrolled in bachelor degrees in Engineering, averaged over all years of study, and more detailed data for 2001, 2016 and 2017.

Success rates	Domestic				International			
	male		female		male		female	
	full-time	part-time	full-time	part-time	full-time	part-time	full-time	part-time
2001	85.5	72.0	89.5	77.8	85.7	76.6	89.1	80.6
2016	86.9	73.8	89.2	75.7	86.1	78.8	90.9	74.6
2017	87.4	73.7	90.2	77.3	86.9	76.2	91.7	77.0
2018	85.5				84.2			
2019	85.9				86.0			

It is evident from the detailed rows of this Table that the average success rate in each category has not changed much recently, although the rates for full-time students increased by a couple of percentage between 2001 and 2017. The earlier year data revealed that, on average, women performed better than men, and students in part-time study have lower average success rates. Other earlier data (not shown here) demonstrated that success rates increase once beyond their commencing year of study. The post-2017 aggregated rates smooth out these category differences.

The visual analytics data enable on-line inspection of the success rates of each provider and comparisons with rates for other fields of education. The following points are evident:

- amongst ACED members, the average 2019 success rates for domestic bachelor degree students in Engineering ranged from >90% (nine providers) down to <70% (one provider)
- for international students this range was from >90% (four providers) to <70% (two providers).
- the average success rate (85.9%) for domestic students in Engineering in 2019 was slightly higher than the 'All Fields average' of 84.6%. This placed Engineering fifth in the 11 fields of education after Health, Agriculture & Environment, Creative Arts and Architecture & Building.
- for international students, the average success rate (86.5%) in 2019 for Engineering ranked eighth amongst the fields of education, two places higher than in 2018.

These ranges reflect differences in providers' location (regional/metropolitan) and history, and the educational background and typical patterns of study (full-time/part-time) of their Engineering cohorts.

7.2 Annual retention and attrition rates

Retention rates record the progression outcome for the identified year as 'retained' for either **continuing** to the subsequent year of study or for **graduating in the year of study or the following year**. Attrition is the corresponding loss of students from their degree program¹⁰.

Previous ACED reports included data that showed that the **differences** in annual retention rates with respect to students' citizenship status, gender and type of enrolment were similar to those of the success rates. The visual analytics tool now reports only on retention for **commencing students**, (i.e. those in their first year of enrolment in a course of study) in two ways. Put simply, the 'normal'

¹⁰ The definitions for the attrition and retention rates may be found at <https://heimshelp.education.gov.au/resources/glossary/glossaryterm?title=Attrition%20Rate> and <https://heimshelp.education.gov.au/resources/glossary/glossaryterm?title=Retention%20Rate>

rate applies to retention within an institution (using StudentID), while ‘adjusted’ rates allow for following year transfer to another HE provider, using the StudentID and CHESN (national) identifiers. The following year enrolment may be in a different program or field of education.

Transfer from Engineering to other fields of education has previously been estimated to be up to 9%, primarily after the first year of study. Transfer into engineering from another field is less common.

The following shows the last two years of retention rate data for bachelor degree students in Engineering & Related Technologies, compared with All Fields, and comparable 2008 baseline data:

Year field of education	Domestic		International	
	Normal Rate, %	Adjusted Rate, %	Normal Rate, %	Adjusted Rate, %
2008 Engineering	87.42	91.85	90.91	90.91
All fields	82.09	87.2	90.76	90.76
2017 Engineering	86.21	91.12	92.84	92.84
All fields	78.84	84.77	90.98	90.98
2018 Engineering	86.37	91.4	91.77	91.78
All fields	79.15	85.13	90.09	90.10

The adjusted rates show that more than 91% of domestic commencing bachelor degree students in Engineering return to study in the following year or graduate. This compares favourably with the adjusted retention rate of about 85% across all fields of education.

The differences between the adjusted and normal rates imply that about 4 – 6% of domestic students in Engineering transfer between institutions after their commencing year of study. International students have slightly higher retention rates, but extremely low transfer rates, as is to be expected from their student visa conditions. Average retention rates have increased slightly over the decade.

As for the success rates, there are significant average differences in retention rates for different study-modes and between provider institutions. For Engineering the most recent adjusted retention rates ranged from >95% at five capital city universities, down to <80% at three regional institutions.

Previously collected data and ACED research found that the retention rates for students continuing from their second year of study towards graduation were higher than that from the commencing year of study, typically higher than 95%. **For 100 commencers into the first year of a four year program, these average rates imply that there will be (0.91)x(0.95)x(0.95)x(0.95) = 78 graduates.** This is broadly consistent with the average completion rates discussed below.

7.3 Completion rates

While the annual success and retention data record students’ progression through their program, completion rates quantify students’ pathways and enrolled time. A visual analytics tool for 4, 6 and 9-year outcomes is available by commencement year, field of education and institution. The following Table shows aggregated data for domestic students who commenced bachelor degrees in Engineering, from 2009. The final row of each set is the outcome of 2019 graduation data.

Year first enrolled	4-year outcomes, %				6-year outcomes, %				9-year outcomes, %			
	A	B	C	D	A	B	C	D	A	B	C	D
2009	25.8	59.2	9.5	5.4	62.3	19.1	13.8	4.8	75.1	5.0	15.5	4.4
2010	25.0	59.6	9.8	5.6	63.1	18.4	13.5	4.8	75.1	5.4	14.9	4.6
2011	26.5	58.5	10.0	5.0	63.3	18.7	13.6	4.4	76.1	5.0	14.9	4.1
2012	25.5	58.5	10.5	5.6	61.2	19.2	14.5	5.1				
2013	24.7	58.5	10.0	5.0	62.0	18.0	14.4	5.6				
2014	24.5	58.6	10.7	6.5	61.6	18.8	14.0	5.6				
2015	25.5	58.0	10.3	6.2								
2016	25.0	59.3	9.2	6.5								

Key A: award completed; B: still enrolled; C: re-enrolled but dropped out; D: never came back after first year

These average progression and completion patterns are clearly quite stable. They show that:

- after 4 years of study, about 25% of the students will have completed a degree;
- after 9 years of study, approximately 75% will have completed, but 5% are still enrolled;
- about 5% will drop out of higher education after their first year
- about 20% will never complete, with a few percent leaving in their later years of enrolment.

These rates are not estimates of the 'likelihood of completion' of the **original** degree in which a student cohort was enrolled, because the reported graduations may be in another field of education. The completion data do, however, allow for transfers between higher education institutions.

The HE Statistics Unit does not routinely produce data that tracks cohorts of graduates back to their original enrolment. The 2018 ACED report used additional commissioned data to show that changing institutions is likely to increase the overall duration of study by about one year. That data also showed that only about 25% of the 2015 graduates in the national BEng(Hons) degree cohort would have completed in 'minimum time'. This is consistent with the Table above. There is however, quite wide variation in this proportion between provider institutions, due to students' study mode (part-time/full-time), enrolment in dual degrees, temporary withdrawal of enrolments, etc.

The key take-home messages from these completion data are that:

- more than 75% of students who **commence** a bachelor degree in Engineering & Related Technologies are likely to graduate within nine years;
- more than 75% of the graduates who **graduate** with a bachelor degree in Engineering & Related Technologies from the institution at which they commenced in higher education are likely to complete within six years.

These are important messages for external stakeholders, some of whom may believe that the standard engineering degree is of three year's duration (see Section 2), and that 'most' graduations are – or should be – achieved in minimum time.

8. STUDENT SATISFACTION AND GRADUATE OUTCOMES

All of the preceding data in this report are from the numbers provided to the Department of Education, Skills and Employment by educational institutions. To understand how students, graduates and employers rate the quality and value of higher education, the Department runs sample surveys under its Quality Indicators for Learning and Teaching (QILT) initiative.

8.1 Student Satisfaction

Appendix Table 11(a) provides undergraduate student satisfaction ratings for Engineering and the other STEM fields, for 2018 and 2019. The Engineering and the 'All fields' averages for 2019 are shown in Figure 8. Overall, the Engineering students' responses are not substantially different from those averaged over all fields. The relatively low ratings for their 'learning experience' is of most concern, as discussed later. The ratings for Engineering have not changed by more than two points over the past four years.

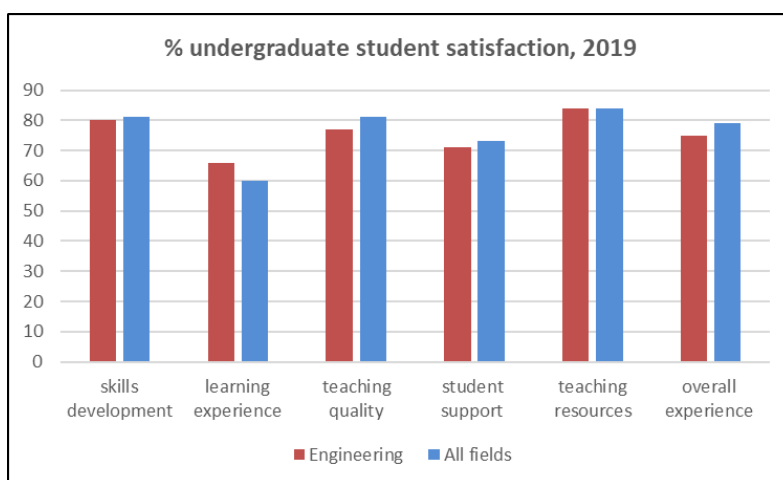


Figure 8. Percentage of undergraduates expressing 'satisfaction' with each criterion, Engineering and 'All fields' averages, 2019

Engineering postgraduate coursework students provide similar ratings in most categories but rate the 'learning experience' about 5 points lower, and 'learning resources' a few points higher than the undergraduates (Appendix Table 11(b)).

8.2 Graduate Satisfaction

Graduates are surveyed during the first six months of each calendar year, following qualification for graduation. Appendix Table 11(c) provides the satisfaction ratings for Engineering and selected other fields, from the 2019 and 2020 surveys. Figure 9 charts the 2020 data, for graduates of undergraduate and postgraduate coursework programs.

The graduates of Engineering programs score their programs **well on generic skills (83.3% expressing satisfaction)**, but **poorly on good teaching (49.4%)**. In fact, Engineering has been rated by the first-degree graduates as lowest of all fields on the good teaching scale for many years. Overall satisfaction is below the 'All fields' average score for both undergraduate and postgraduate categories.

This low 'good teaching' satisfaction rating by graduates of first- degrees appears to be more correlated with the rating for 'learning experience' in the student satisfaction survey, discussed earlier, than their rating of 'quality of teaching'. While the two surveyed populations are clearly different and are at different stages of their education and post-graduation journeys, the apparent disparity may be worth further investigation.

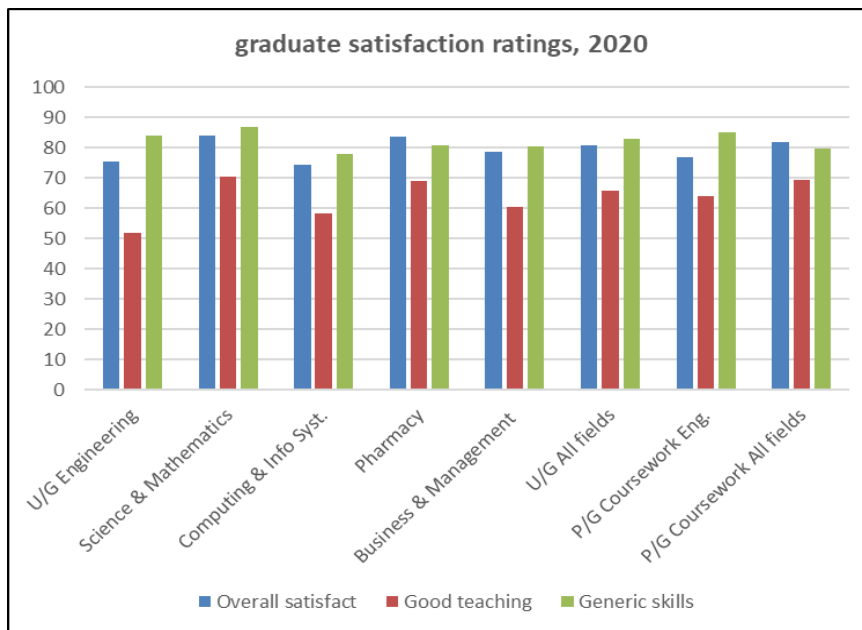


Figure 9 Graduate satisfaction ratings for coursework degrees in Engineering and selected other fields, and 'All field' averages, surveyed in 2020

Graduates of higher degrees by research (HDR) rate their experience against different criteria, as shown in Appendix Table 11(c). In the 2020 survey, Engineering research graduates rated **all criteria at or higher** than the 'All fields' averages. Since 2016, more than 85% of these graduates have expressed agreement with 'overall satisfaction', rising to 88% in the 2020 survey.

In the 2020 survey, **more than 90%** of the HDR graduates were satisfied with their 'skills development' and [meeting] 'goals and expectations'. The largest **positive** differences between Engineering and the 'All field' averages were in 'infrastructure', 'industry and external engagement' and 'intellectual climate'. Nevertheless, the absolute values of the second and third of these ratings were approximately 68% in both the 2019 and 2020 surveys. These are a lower satisfaction scores than might be expected or desired of a research degree in Engineering. Furthermore, 80% of Engineering HDR graduates rated 'supervision' as satisfactory compared with the 'All field' average of 82.3%.

8.3 Employer Satisfaction Survey

The most recent employer satisfaction survey was published on data collected in 2019. Engineering was the field of education **with the highest overall employer satisfaction (89.9%)**. Data are provided in Appendix Table 11(d,e), including for other STEM fields and the previous year.

The most interesting features of these findings are that employers rate engineering graduates **well above** the 'All field' averages in 'foundation', 'collaborative', 'technical' and 'employability' skills, as well as 'overall satisfaction' with the graduates. Engineering graduates are marginally above the 'All field' rate for 'adaptive skills'.

Graduates' supervisors rate the **importance** of the graduates' qualification somewhat higher than the graduates themselves (this difference applies to all fields). However, the 67.7% of employers of Engineering graduates rating this measure as 'important or very important', is a lower figure than that for Health graduates (79.2%), whose education is invariably more specifically focused to well-defined (and regulated) employer needs.

The majority (92.2%) of graduates' supervisors across all fields of education rated the **extent** to which the qualification prepared graduates for their current role as 'well' or 'very well'. Again, Engineering graduates were rated higher than this (92.7%) but lower than Health (94.9%). Graduates themselves expressed about 5% points less confidence about the 'fit' of their qualification.

8.4 Graduate Employment Outcomes – short-term

Recent data for employment and remuneration outcomes for the Engineering & Related Technologies field of education, compared with selected and 'All' fields are provided in Appendix Table 12(a,b,c). 'Short-term' refers to graduates surveyed in the six months of the calendar year following graduation.

Graduates of Undergraduate Programs

The following Table shows that recent year Engineering graduates from undergraduate programs have gained full-time employment and received higher median salaries at **higher rates** than other fields, as represented by the 'All field' values:

Year of graduation/field	% in full-time employment	median salary		% in any employment	% in further FT study
		male	female		
2017 undergraduate Engineering	83.1%	\$ 65,000	\$ 65,000	88.2%	15.0
2017 undergraduates All fields	72.9%	\$ 63,000	\$ 60,000	87.0%	19.4
2018 undergraduate Engineering	84.8%	\$ 67,800	\$ 67,000	88.4%	12.8
2018 undergraduates All fields	72.2%	\$ 64,700	\$ 61,500	87.7%	18.9
2019 undergraduate Engineering	83.0%	\$ 69,400	\$ 70,000	87.6%	11.18
2019 undergraduates All fields	68.7%	\$ 65,000	\$ 63,400	85.1%	18.5

While the **employment** trends for Engineering graduates appear good, the 2020 survey observed that the impact of COVID-19 was starting to appear at the time of the survey. This is most clearly evident in the Table above by the 4% drop in the 'All field U/G' full-time employment rate, compared with the previous years. The part-time employment rates for 'All field U/G' also increased (see Appendix Table 12(a)) on previous year values, from 37% (2018 survey) to 41.0% in the 2020 survey, while the Engineering graduates' part-time employment rates actually decreased from 16.4% to 14.0% over the those three surveys.

As in previous years, the median salaries received by Engineering graduates have been higher than the surveyed population as a whole, and third after Dentistry and Medicine (see Appendix Table 12(b)). The reported median salary for Engineering women was slightly higher than that of men.

The match between employment and skills are also surveyed. The following Table shows that fewer employed Engineers report that their skills are not being fully used, in general, than the 'All field' populations, irrespective of the status of their employment. This difference can be taken to indicate that Engineering degrees provide their graduates with a broad range of skills, even if they are not fully utilised. Relatively more non-engineers are in (some) employment that does not use their skills.

An apparent lack of availability of jobs that do not use expertise is reported by about 20% of all graduates who are in work.

Year of graduationundergraduate cohorts	% of FT employed reporting skills not fully used		% of all employed reporting skills not fully used	
	in general	because of lack of jobs in area of expertise	in general	because of lack of jobs in area of expertise
2017 undergraduate Engineering	21.6	26.4	29.7	25.6
2017 undergraduates All fields	27.1	23.5	38.9	23.0
2018 undergraduate Engineering	19.8	22.0	26.6	19.8
2018 undergraduates All fields	28.3	20.8	40.4	19.6
2019 undergraduate Engineering	21.0	18.0	27.0	21.0
2019 undergraduates All fields	28.1	20.1	40.9	19.5

Graduates of Postgraduate Coursework Programs and Research

The employment outcomes for postgraduates are generally stronger than those of first-degree graduates, but do not display any systematic "Engineering advantage" with respect to the 'All field' averages. HDR graduates report high (although declining) rates for underutilised skills of research graduates. Relevant data from Appendix Table 12(a) are reproduced here:

Year of graduation postgraduate cohort	% in work, of all available for any work	% in FT work, of all available for FT work	% of FT employed reporting skills not fully used		% of all employed reporting skills not fully used	
			in general	because of lack of jobs in area of expertise	in general	because of lack of jobs in area of expertise
2017 Coursework Engineering	88.8	84.6	32.1	21.5	34.6	23.0
2017 All Fields Coursework	92.9	86.9	26.9	22.7	29.2	22.9
2017 Research Engineering	90.7	85.0	24.8	41.1	27.0	36.7
2017 All Fields Research	91.8	82.3	24.5	33.6	27.9	35.9
2018 Coursework Engineering	89	85	28.7	24.7	32.2	25.1
2018 All Fields Coursework	92.7	86.8	26.6	19.6	29.0	20.0
2018 Research Engineering	87	80	20.9	39.7	24.0	35.4
2018 All Fields Research	90.7	81.1	25.8	37.5	29.5	36.4
2019 Coursework Engineering	89	86	31	18	34	11
2019 All Fields Coursework	91.6	85.6	27.2	17.3	29.9	18.3
2019 Research Engineering	86	81	26	32	27	32
2019 All Fields Research	90.0	80.1	25.6	30.0	28.2	32.2

Appendix Table 11(b) shows that the median salaries earned by postgraduates of Engineering and 'All fields' are significantly higher than those of first-degree graduates. Postgraduate Engineers do not, however, have any advantage over those in other fields. Women Engineers in this category are earning several \$',000 less than their male peers, and graduates of research degrees do not gain any salary advantage for their years of study.

8.5 Graduate Employment Outcomes – medium-term

A medium-term **longitudinal survey** of graduates is also undertaken each year, to report changes in employment and remuneration three years after graduation. Details are provided in Appendix Table 12(d), for first-degree graduates and graduates of postgraduate coursework and research degrees.

In addition to the employment and remuneration outcomes, the data includes occupational classifications for those employed, that shows both progression within each qualification category, and the propensity of Engineers with a postgraduate coursework qualification to progress towards management.

Averaging the changes from the last four longitudinal surveys shows the value of post-graduation experience in terms of average employment rates and median remuneration. These changes are summarised in the following Table:

measure	changes over three years from graduation		
	undergraduate	postgraduate coursework	postgraduate research
F/T employment	18.3%	9.3%	16.0%
Overall Employment	8.9%	5.5%	7.1%
Median Salary	\$ 16,725	\$ 16,400	\$ 16,000
Roles (of Overall Employed)			
managers	5.3%	1.4%	-3.0%
professionals	4.3%	-0.4%	1.2%
other	-9.6%	-1.4%	0.9%

Full-time employment rates and salaries increase the most for those with first degrees, by 18.3%, and \$16,725 respectively, and their employment is consolidated in manager and professional occupations. This salary increase is well ahead of three-year CPI increases over the past decade.

9. ACADEMIC STAFF DATA AND STUDENT-STAFF RATIOS FOR ACED MEMBERS

9.1 Academic staff numbers

From HE Statistics sources, there were 3,924 academic staff (full time equivalent) in non-casual positions in Engineering in **26 of the ACED member universities** (see Appendix Table 13, and Figure 10)

The total number of FTE teaching staff (in Teaching-only and Teaching & Research positions) increased slightly in 2019 to 2,136, having peaked in 2016 at 2,395. The number of Research-only staff increased by 106 to 1,788, making up 45.6% of the total. The number of Teaching-only positions increased to 180, FTE, the highest number on record.

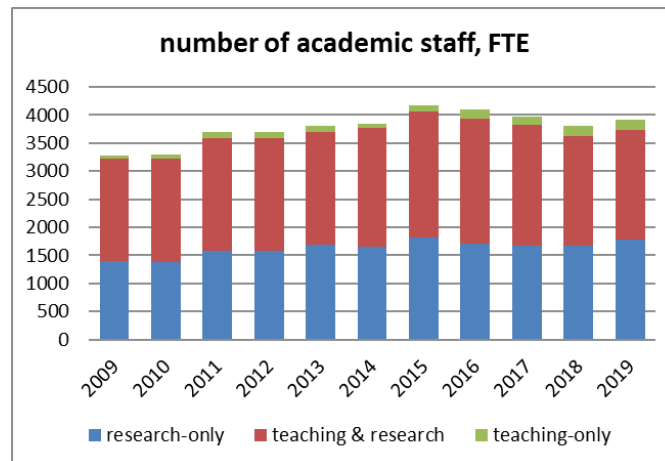


Figure 10 Academic staff (FTE) in Engineering & Related Technologies, 26 ACED members, 2009-19

These numbers **understate** the academic staffing in Engineering. The HE Statistics for nine universities (including one with a very large engineering faculty) reported having no academic staff. In Engineering¹¹. It is estimated that these universities contribute a further 310 FTE in teaching roles and 130 in research positions.

In addition, the contributions of casual teaching staff are not included in the FTE data above. HE Statistics reported 865 FTE casual staff in 2018 for the 26 universities providing data on Engineering. It is estimated that the other nine universities are likely to have employed approximately 125 casual FTE staff in teaching.

Overall, it is estimated that in 2019, across all ACED members, there were approximately:

2,450 FTE academic staff in teaching roles (including formal research supervision)

990 FTE casual academic staff in teaching roles

1,920 FTE in research-only positions

9.2 Women in Academic positions

The contribution of women (in FTE) in Teaching & Research and Research-only academic positions (in the 26 universities that report data) in Engineering has been fairly constant over the last five years. Their contribution to Teaching-only positions has increased steadily from 17 FTE in 2014 to 55 FTE in 2019. This rate of increase is slightly higher than that of men (67 to 135 FTE) over the same period. Overall, the proportion of FTE in academic positions increased to 18.6% in 2018 and remained at that figure in 2019.

¹¹ Most of these universities operate a multi-field academic structure and would have reported their engineering staff in Science.

Figure 11(a) shows that this increase has been primarily in Teaching & Research and Teaching-only positions, but this still lags the proportion in Research-only positions.

Figure 11(b) shows that the proportion of women is highest (>25%) in academic Level B teaching positions, but lowest (~11%) in academic Level D/E teaching positions. This shape of distribution is similar, but less strongly differentiated, for research-only positions.

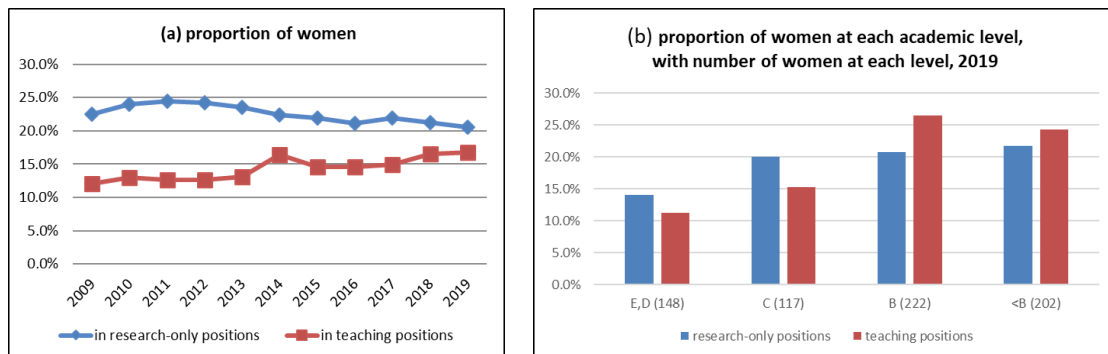


Figure 11 Contributions of women academic staff (FTE) in Engineering & Related Technologies: (a) proportions by role, 2009-19, (b) proportions and number at each academic level, 2019

9.3 An estimate of the student-to-academic staff ratio

The aggregate ratio of student load to teaching-academic-staff (including casuals) for the ACED members, calculated from the 2019 data reported and estimated in this report is approximately $81,046 \text{ EFT} / 3,540 \text{ FTE} = 23$.

This is slightly less than the approximate ratio of 25.7 for the HE system as a whole, calculated from the total 2019 load of 1,142,424 EFT, and academic staffing (including casuals) of 44,408 FTE (in 2018), published in HE Statistics data.

10. ACED MEMBER PROFILES: ENROLMENTS AND PROGRAMS

Appendix 1 Table 14 provides summary data on the commencing and total enrolments and graduation and staffing from all the ACED members, listed alphabetically in each state and territory. The University of New South Wales (including its College at Canberra which is a member of ACED in its own right) has the largest number of enrolments and graduations.

Appendix Table 15 provides a tabulation of the coursework awards offered by each ACED member during 2019 in terms of the number of engineering branches covered by EA accredited awards (including entry-to-practice Master degrees) and the numbers of other postgraduate Master degrees in two categories: advanced technical awards in management. The latter are mostly 'engineering project management'. Table 16 elaborates these data to show the branches of engineering in which the accredited programs are offered, both onshore and offshore.

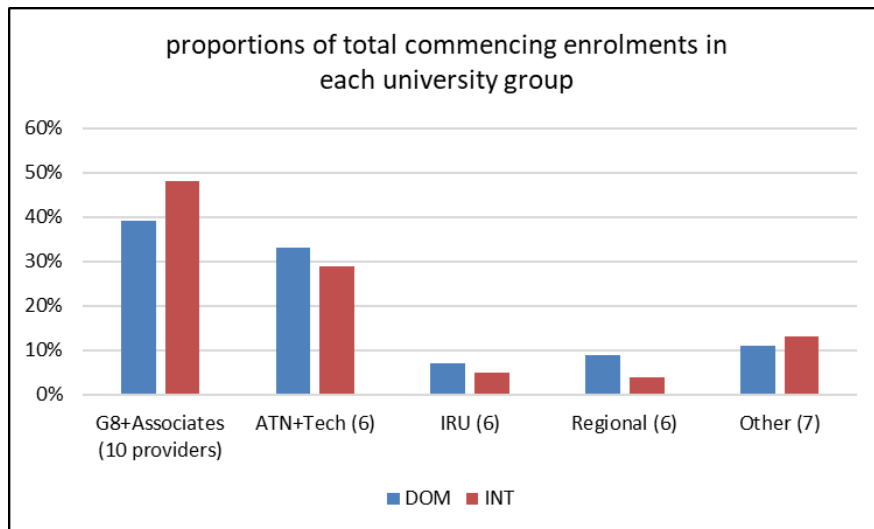


Figure 12 Proportions of the total 2019 domestic and international commencing cohorts, by university grouping

Figure 12 shows clearly that the Australian members of the eleven-member 'Group of Eight Engineering Deans and Associates' (G8 plus Newcastle, Wollongong and Auckland) has the largest share of both domestic and international Engineering students. Together with six 'technology' universities (the ATN group plus QUT and Swinburne) 72% of the domestic engineering commencing enrolments and 78% of the international commencing enrolments are in these sixteen providers. The G8+Associates and ATN+Tech groups have even higher proportions of graduations, reflecting net transfers into these institutions, as well as higher average retention rates. These sixteen institutions also have the greatest number and spread of programs (Appendix, Tables 15, 16).

The 'Other' group includes metropolitan universities. Regional universities and members of the Innovative Research University (IRU) group together take approximately 16% and 9% of domestic and international enrolments, respectively.

Two other features of the G8+Associates group are their higher than average participation by women and their dominance of 'extended' duration degrees. In 2019, women comprised 23.6% and 26.5% of the domestic and international commencing student cohorts, respectively.

The University of Melbourne, The University of Western Australia and Charles Sturt University have all of their domestic professional engineers on a Bachelor + Master track. The other eight G8+Associates providers have high take-up by domestic students of 'double', 'dual' and 'combined' degrees programs for their **bachelor degree students**'. In 2019 these providers graduated 1,500 students from programs of longer than 4-years duration, representing 42.7% of their bachelor degree graduations. This measure ranged from 62.8% down to 11.4% across the providers.

A further two providers operate extended duration co-operative education schemes with extended industry internships, for which a Diploma may be awarded, covering about 400 graduates in 2019.

11. SOURCES and CAVEATS

The detailed enrolments, graduations, basis of admission and staffing data presented in the following Tables were obtained from the Department of Education, Skills and Employment Higher Education Statistics Unit.

Load data and less detailed data on enrolments and graduations are available for download from the HE Statistics Unit website <https://www.education.gov.au/higher-education-statistics> or are compiled from the HE datacube (uCube) at <https://www.education.gov.au/ucube-higher-education-data-cube>

The HE Statistics Unit website provides links to visual analytics tools, including student success, retention and completion rates, as well as the annual *Undergraduate Applications, Offers and Admissions* reports.

The direct link to the QILT (Quality Indicators for Teaching and Learning) website is <https://www.qilt.edu.au/about-this-site> for access to annual Graduate Outcomes and Employer Satisfaction surveys.

As in previous years, the notes in the Appendix Table 2 and the comments on staff reporting raise questions about the completeness and accuracy of the data that ACED member universities are providing to the HE Statistics Unit. ACED members will know how to interpret their own data against these national summaries.

ACED takes responsibility for any errors in transcribing and interpreting data from the sources used.

Prof Robin W King
Consultant to ACED
11 December 2020

APPENDIX SUPPORTING TABLES

TABLE 1 ENGINEERING COMPLETIONS 2009-19

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
DOCTORATES	705	792	782	953	1,113	1,268	1,259	1,358	1,417	1,437	1,542
domestic total	479	474	399	496	536	572	603	603	637	641	674
% domestic female	21.1%	22.0%	23.3%	23.2%	24.8%	27.3%	23.2%	27.0%	25.0%	28.7%	27.7%
international total	226	318	383	457	577	696	656	755	780	796	868
% international female	19.9%	19.9%	23.0%	25.2%	27.0%	24.3%	26.7%	23.0%	27.4%	22.9%	25.5%
% international	32.1%	40.2%	49.0%	48.0%	51.8%	54.9%	52.1%	55.6%	55.0%	55.4%	56.3%
RESEARCH MASTER	185	196	235	212	245	218	229	244	226	222	235
domestic total	99	99	115	100	132	103	108	116	105	93	93
% domestic female	18.2%	23.2%	26.1%	15.0%	22.0%	22.3%	31.5%	31.0%	21.9%	32.3%	22.6%
international total	86	97	120	112	113	115	121	128	121	129	142
% international female	25.6%	33.0%	22.5%	31.3%	26.5%	24.3%	41.3%	27.3%	23.1%	26.4%	25.4%
% international	46.5%	49.5%	51.1%	52.8%	46.1%	52.8%	52.8%	52.5%	53.5%	58.1%	60.4%
COURSEWORK MASTER	3,134	3,684	3,829	3,404	3,758	4,138	4,748	5,431	6,348	8,074	8,662
domestic total	788	1,024	1,045	1,145	1,335	1,426	1,543	1,567	1,590	1,601	1,477
% domestic female	17.6%	18.6%	16.1%	15.4%	17.9%	18.8%	19.4%	17.70%	17.6%	18.3%	19.2%
international total	2,346	2,660	2,784	2,259	2,403	2,712	3,205	3,864	4,758	6,473	7,185
% international female	18.8%	18.7%	18.9%	19.3%	19.5%	19.1%	19.5%	20.7%	22.4%	22.1%	20.5%
% international	74.9%	72.2%	72.7%	66.4%	64.3%	65.5%	67.5%	71.1%	75.0%	80.2%	82.9%
OTHER POSTGRADUATE	829	951	1,098	921	945	958	1,008	774	681	577	646
domestic total	588	672	746	704	763	794	848	643	545	466	513
% domestic female	19.0%	22.2%	17.8%	19.5%	17.6%	21.8%	18.4%	17.9%	16.9%	17.2%	19.7%
international total	241	279	352	217	219	164	160	137	136	111	133
% international female	17.0%	15.1%	13.6%	11.1%	16.0%	18.9%	21.3%	18.2%	19.3%	21.6%	15.8%
% international	29.1%	29.3%	32.1%	23.6%	22.3%	20.7%	18.9%	17.7%	25.0%	19.2%	20.6%
BACHELOR	8,652	9,149	9,849	10,261	11,018	11,373	11,117	11,561	12,043	12,987	12,597
domestic total	6,063	6,237	6,534	6,795	7,044	7,392	7,634	7,743	7,742	8,295	7,729
% domestic female	14.9%	14.7%	14.6%	14.9%	14.6%	15.3%	14.3%	14.60%	14.9%	15.3%	16.0%
international total	2,589	2,912	3,315	3,466	3,974	3,981	3,483	3,818	4,301	4,692	4,868
% international female	18.3%	18.4%	18.2%	18.1%	18.2%	19.9%	19.4%	19.6%	20.3%	22.2%	21.7%
% international	29.9%	31.8%	33.7%	33.8%	36.1%	35.0%	31.3%	33.0%	33.0%	36.1%	38.6%
ASSOC DEG & ADV DIPL	369	417	384	663	617	620	699	670	670	699	634
domestic total	278	320	327	518	479	523	570	543	493	541	472
% domestic female	8.6%	10.9%	~8%	~7%	8.1%	9.6%	9.5%	10.1%	7.3%	8.9%	10.0%
international total	91	97	57	145	138	97	129	127	165	158	162
% international female	4.4%	5.2%	~11%	~6%	8.0%	12.4%	12.4%	3.9%	13.9%	16.5%	12.3%
% international	24.7%	8.0%	14.8%	21.9%	22.4%	15.6%	18.5%	19.0%	19.0%	22.6%	25.6%
OTHER UNDERGRAD	314	404	534	501	551	1,035	1,029	1,350	1,350	1,364	1,555
domestic total	60	109	130	141	152	264	239	285	291	278	319
% domestic female	8.3%	4.6%	~8%	~7%	13.2%	7.6%	7.5%	7.4%	10.3%	8.6%	11.6%
international total	254	295	404	360	399	771	790	1,065	1,099	1,086	1,236
% international female	13.8%	10.8%	~11%	~10%	8.0%	10.0%	14.1%	12.0%	13.9%	15.5%	14.0%
% international	80.9%	73.0%	75.7%	71.9%	72.4%	74.5%	76.8%	78.8%	81.4%	79.6%	79.5%
ALL GRADUATES	14,188	15,590	16,484	16,912	18,286	19,550	20,089	21,394	22,735	25,360	25,871
domestic total	8,355	8,935	9,257	9,896	10,461	11,074	11,545	11,500	11,403	11,915	11,277
% domestic female	15.6%	15.9%	15.2%	15.2%	15.5%	16.5%	15.5%	15.7%	15.6%	14.9%	17.0%
international total	5,833	6,655	7,227	7,016	7,825	8,476	8,544	9,894	11,360	13,445	14,594
% international female	18.2%	18.3%	18.0%	18.3%	18.6%	19.2%	19.7%	19.3%	20.9%	21.6%	20.5%
% international	41.1%	42.7%	43.8%	41.5%	42.8%	43.4%	42.5%	46.2%	50.0%	53.0%	56.4%

TABLE 2 UNDERGRADUATE COMPLETIONS 2019, BY AWARD, DURATION AND 4-DIGIT FOE CODE

YEAR/SOURCE/LEVEL	TOTAL	0300	0301	0303	0305	0307	0309	0311	0313	0315	0317	0399
Domestic												
Assoc. Deg./Adv. Dip	472	53	<5	<5	<5	11	33	28	42	48	<5	253
3-year Bach	524	24	<5	<5	<5	21	<50	21	53	215	54	128
4-year Bach	4,821	1044	65	214	16	524	974	144	682	193	46	919
> 4-year Bach	2,526	822	15	196	2	161	300	2	246	60	9	713
TOTAL DOMESTIC	8,345	1,943	85	411	22	717	1,307	197	1,023	516	111	2,013
% female	16.0%	16.3%	6.0%	30.7%	0.0%	11.0%	17.1%	7.8%	11.4%	14.7%	7.3%	19.8%
~ % of total (ex 300/399)	4,387		1.9%	9.4%	0.5%	16.3%	29.8%	4.4%	23.3%	11.8%	2.5%	
International												
Assoc. Deg./Adv. Dip	162	14	<5	<5	<5	7	21	<5	31	<5	14	73
3-year Bach	486	59	35	<5	<5	18	<5	<5	23	249	39	60
4-year Bach	4,075	1,438	11	195	9	468	676	3	609	71	26	569
> 4-year Bach	319	197	<5	9	<5	12	17	<5	6	<5	5	69
TOTAL INTERNATIONAL	4,880	1,694	46	204	10	498	693	5	638	324	70	698
% female	21.6%	24.1%	43.4%	40.1%	10%	10.0%	18.4%	0%	15.8%	32.4%	12.8%	22.7%
~ % of total (ex 300/399)	2,488		1.8%	8.2%	0.4%	20.0%	27.9%	0.2%	25.6%	13.0%	2.8%	
% international	36.9%	46.6%	35.1%	33.1%	33.3%	41.0%	34.7%	2.5%	38.4%	38.6%	38.7%	25.7%

<p>ASCED 4-digit codes</p> <p>0300 Engineering & Related Technologies 0301 Manufacturing Eng. & Tech. 0303 Process & Resources Engineering 0305 Automotive Eng. & Tech. 0307 Mechanical & Industrial Eng & Tech. 0309 Civil Engineering 0311 Geomatic Eng. & Tech 0313 Electrical & Electronic Eng. & Tech, 0315 Aerospace Eng. & Tech. 0317 Maritime Eng. & Tech 0399 Other Engineering & Related Tech's</p> <p>6-digit ASCED codes are shown in Table 20</p>	<p>Notes:</p> <p>Low numbers (<5) are suppressed in providers' returns to avoid identification of individuals.</p> <p>ANU, Curtin, CQUni, JCU, Murdoch UTS, UWA, WSU use code 0300 for most graduates.</p> <p>CDU, Griffith, Monash, QUT and USQ and use code 0399 for most graduates</p> <p>"Software engineering" does not appear specifically in the ASCED codes for either engineering or Information Technology (ASCED FOE code 02), so may be classified in the universities' returns in different ways. See Table 19.</p> <p>The 0301 manufacturing engineering sub-code includes "printing", "textile/garment/furniture making", that are likely to be more relevant to sub degree-level HE qualifications offered by the VET sector.</p> <p>0315 Aerospace Eng. and Technology includes 3-year civil aviation degrees, taken primarily by students aiming towards the aviation industry. Many of these programs offer commercial pilot training in parallel with the academic award.</p> <p>The full set of ASCED codes is at: http://www.abs.gov.au/Ausstats/abs@.nsf/0/E7779A9FD5C8D846CA256AAF001FCA5C?opendocument</p>
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TABLE 3 TOTAL ENROLMENTS (STUDENTS) 2009-19

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
DOCTORATES	5,054	5,567	6,258	7,059	7,427	7,668	8,035	8,338	8,718	8,971	9,117
domestic total	2,866	2,982	3,183	3,404	3,389	3,372	3,617	3,788	3,877	3,664	3,456
% domestic female	22.9%	23.8%	23.9%	23.7%	24.9%	25.5%	25.5%	26.1%	26.3%	26.2%	26.8%
international total	2,188	2,585	3,075	3,655	4,038	4,296	4,418	4,550	4,841	5,307	5,661
% international female	26.0%	26.4%	27.1%	26.6%	25.7%	25.9%	25.9%	26.0%	26.8%	27.5%	27.6%
% international	43.3%	46.4%	49.1%	51.8%	54.4%	56.0%	55.0%	54.6%	55.5%	59.2%	62.1%
RESEARCH MASTER	1,120	1,245	1,191	1,194	1,148	1,191	1,182	1,070	1,017	933	909
domestic total	697	769	704	689	662	684	712	660	590	493	431
% domestic female	19.5%	20.0%	19.9%	20.6%	22.4%	21.8%	21.5%	21.4%	21.5%	18.2%	19.0%
international total	423	476	487	505	486	507	470	410	427	440	478
% international female	29.8%	28.6%	27.9%	29.9%	29.8%	27.6%	26.6%	28.8%	26.7%	22.5%	25.5%
% international	37.8%	38.2%	40.9%	42.3%	42.3%	42.6%	39.8%	38.3%	42.0%	47.2%	52.6%
COURSEWORK MASTER	8,630	9,266	8,999	9,078	10,566	12,776	15,237	18,381	21,605	24,663	25,722
domestic total	3,164	3,630	3,856	4,061	4,434	4,822	5,159	5,358	5,342	5,014	4,743
% domestic female	17.0%	17.3%	16.9%	16.9%	17.7%	18.6%	18.8%	17.9%	17.8%	19.2%	19.4%
international total	5,466	5,636	5,143	5,017	6,132	7,954	10,078	13,023	16,263	19,649	20,979
% international female	17.1%	18.1%	18.4%	18.5%	17.6%	17.7%	18.9%	20.2%	20.4%	19.4%	19.4%
% international	63.3%	60.8%	57.2%	55.3%	58.0%	62.3%	66.1%	70.9%	75.3%	79.7%	81.6%
OTHER POSTGRADUATE	2,556	2,611	2,555	2,554	2,525	2,286	1,924	1,533	1,390	1,221	1,371
domestic total	2,085	2,151	2,122	2,206	2,177	2,051	1,698	1,328	1,175	1,059	1,155
% domestic female	19.0%	19.6%	20.0%	18.8%	19.4%	17.8%	17.4%	17.1%	18.6%	18.2%	18.0%
international total	471	460	433	348	348	235	226	205	215	162	216
% international female	13.8%	16.1%	17.1%	17.2%	19.5%	20.0%	21.2%	21.5%	17.2%	23.4%	20.8%
% international	18.4%	17.6%	16.9%	13.6%	13.8%	10.3%	11.7%	13.4%	15.5%	13.3%	15.8%
BACHELOR	57,842	61,518	64,236	66,207	69,342	71,560	73,138	74,874	75,767	77,365	77,851
domestic total	42,726	44,656	46,385	48,083	50,547	52,135	52,755	52,722	51,885	52,254	52,491
% domestic female	13.7%	14.0%	13.8%	13.4%	13.7%	14.1%	14.4%	14.9%	15.5%	16.4%	17.3%
international total	15,116	16,862	17,851	18,124	18,795	19,425	20,383	22,152	23,882	25,111	25,360
% international female	17.5%	17.6%	17.5%	17.4%	17.7%	18.1%	19.0%	19.3%	20.0%	19.9%	19.1%
% international	26.1%	27.4%	27.8%	27.4%	27.1%	27.1%	27.9%	29.6%	31.5%	32.5%	32.6%
ASSOC DEG & AQF DIPL	2,419	3,050	3,408	4,318	4,199	3,746	3,654	3,400	3,233	3,218	3,192
domestic total	2,095	2,740	2,980	3,818	3,752	3,401	3,240	2,937	2,719	2,715	2,612
% domestic female	9.5%	10.3%	n/a	9.0%	9.5%	9.1%	9.5%	9.4%	9.5%	10.0%	10.6%
international total	324	310	428	500	447	345	414	463	514	503	580
% international female	4.0%	3.2%	n/a	24.6%	11.9%	9.0%	6.8%	8.0%	10.3%	12.1%	14.5%
% international	13.4%	10.2%	12.6%	11.6%	10.6%	9.2%	11.3%	13.6%	15.9%	15.6%	18.2%
OTHER UNDERGRADUATE	1,470	2,082	1,540	1,649	2,609	3,077	3,040	3,463	3,500	3,529	3,818
domestic total	671	971	576	596	1,175	1,206	847	918	869	876	1,027
% domestic female	26.8%	28.1%	n/a	40.4%	24.0%	18.3%	14.5%	17.0%	8.9%	10.0%	12.4%
international total	799	1,111	1,101	1,053	1,434	1,871	2,193	2,545	2,631	2,653	2,791
% international female	12.6%	11.9%	n/a	n/a	8.5%	9.2%	10.2%	11.3%	13.0%	13.4%	12.1%
% international	54.4%	53.4%	71.5%	63.9%	55.0%	60.8%	72.1%	73.5%	75.2%	75.2%	73.1%
ALL ENROLMENTS	79,091	85,339	88,777	92,059	97,816	102,304	106,210	111,059	115,420	119,433	121,980
domestic total	54,304	57,899	60,251	62,857	66,136	67,671	68,028	67,711	66,647	66,075	65,915
% domestic female	14.7%	15.0%	14.8%	14.5%	14.8%	15.0%	14.9%	15.6%	16.0%	16.9%	17.6%
international total	24,787	27,440	28,526	29,202	31,680	34,633	38,182	43,348	48,773	53,358	56,065
% international female	18.0%	18.3%	18.7%	18.4%	18.4%	18.6%	16.9%	19.8%	14.9%	20.2%	19.7%
% international	31.3%	32.2%	32.1%	31.7%	32.4%	33.9%	35.9%	39.0%	42.3%	44.7%	46.0%

TABLE 4 STUDENT LOAD (EFT) IN ENGINEERING AND RELATED TECHNOLOGIES 2019, BY SUB-FIELD AND PROGRAM LEVEL, AND SUMMARY EFT LOAD TOTALS FROM 2011

DOMESTIC STUDENT LOAD (2019)	Doctor-ates	Master	other p-grad	Bach-elor	other u-grad	Enab	Non award	TOTAL
Manufacturing Engineering & Technology	16	60	2	811	42	0	0	931
Process and Resources Engineering	418	262	93	2,291	98	0	10	3,171
Automotive Engineering & Technology	1	2	0	32	0	0	0	34
Mech/Industrial Eng & Technology	395	327	58	5,915	217	0	3	6,916
Civil Engineering	431	589	62	7,182	209	1	10	8,483
Geomatic Engineering	35	96	32	1,100	112	0	1	1,375
Electrical/Electronic Eng & Technology	478	522	26	7,534	264	0	11	8,836
Aerospace Engineering & Technology	60	67	118	1,356	165	0	6	1,773
Maritime Engineering & Technology	22	18	9	189	1	0	0	239
Other Engineering & Related Tech's	401	757	115	7,559	312	16	18	9,178
DOMESTIC TOTAL 2019	2,257	2,700	515	33,969	1,420	17	59	40,936
DOMESTIC TOTAL 2018	2,514	2,888	457	33,545	1,390	3	45	40,839
DOMESTIC TOTAL 2017	2,721	3,164	469	33,730	1,437	5	61	41,587
DOMESTIC TOTAL 2016	2,695	3,249	546	34,783	1,455	7	51	42,787
DOMESTIC TOTAL 2015	2,588	3,114	629	35,134	1,521	46	58	43,087
DOMESTIC TOTAL 2014	2,378	2,730	746	34,681	1,609	55	69	42,267
DOMESTIC TOTAL 2013	2,225	2,399	756	33,571	1,608	62	49	40,856
DOMESTIC TOTAL 2012	2,304	2,080	766	31,962	1,563	65	33	38,890
DOMESTIC TOTAL 2011	2,273	1,918	673	30,118	1,376	62	25	36,630

ALL STUDENT LOAD (2019)	Doctor-ates	Masters	other p-grad	Bach-elor	other u-grad	Enab	Non award	TOTAL
Manufacturing Engineering & Technology	48	1,195	3	1,139	77	0	13	2,475
Process and Resources Engineering	1,389	1,282	105	4,254	182	0	44	7,256
Automotive Engineering & Technology	1	43	0	52	0	0	1	96
Mech/Industrial Eng & Technology	1,037	2,251	73	9,424	402	0	59	13,247
Civil Engineering	1,431	3,664	81	11,786	363	1	62	17,387
Geomatic Engineering	80	363	38	1,271	135	0	8	1,896
Electrical/Electronic Eng & Technology	1,394	4,451	80	11,793	497	0	113	18,328
Aerospace Engineering & Technology	111	162	121	2,002	234	0	14	2,643
Maritime Engineering & Technology	44	74	11	281	21	0	1	431
Other Engineering & Related Tech's	1,186	4,866	152	10,595	728	16	105	17,647
TOTAL (ALL STUDENTS) 2019	6,721	18,351	664	52,597	2,639	17	420	81,406
TOTAL (ALL STUDENTS) 2018	6,786	17,813	563	52,055	2,512	3	358	80,089
TOTAL (ALL STUDENTS) 2017	6,661	15,714	594	51,272	2,659	5	378	77,284
TOTAL (ALL STUDENTS) 2016	6,440	13,264	662	50,828	2,600	7	723	74,525
TOTAL (ALL STUDENTS) 2015	6,207	10,931	749	49,765	2,529	46	975	71,201
TOTAL (ALL STUDENTS) 2014	5,904	9,025	876	48,503	2,511	55	1,058	67,931
TOTAL (ALL STUDENTS) 2013	5,640	7,192	914	47,220	2,408	62	395	63,999
TOTAL (ALL STUDENTS) 2012	5,215	5,913	1,033	44,935	2,275	65	141	59,802
TOTAL (ALL STUDENTS) 2011	4,789	5,650	982	42,911	2,089	62	130	56,816

TABLE 5 ENGINEERING COMMENCEMENTS (STUDENTS) 2009-19

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
DOCTORATES	1,390	1,476	1,528	1,629	1,789	1,834	1,870	1,833	2,140	2,080	1,919
domestic number	586	678	621	601	662	673	718	701	712	589	562
% domestic female	24.4%	24.2%	22.7%	27.6%	25.1%	27.2%	25.2%	24.5%	25.4%	27.5%	29.5%
international number	804	798	907	1,028	1,127	1,161	1,152	1,132	1,428	1,491	1,357
% international female	28.0%	24.8%	27.9%	24.8%	26.4%	28.3%	24.7%	27.7%	27.5%	29.2%	27.3%
% international	57.8%	54.1%	59.4%	63.1%	63.0%	63.3%	61.6%	61.8%	66.7%	71.7%	70.7%
RESEARCH MASTERS	506	521	451	456	433	469	416	375	380	316	329
domestic number	298	303	219	231	234	258	253	214	176	128	120
% domestic female	17.1%	19.5%	21.9%	24.7%	23.5%	19.4%	19.4%	24.3%	24.4%	24.3%	21.7%
international number	208	218	232	225	199	211	163	161	204	188	209
% international female	30.8%	24.8%	28.9%	28.9%	27.6%	26.1%	26.4%	31.1%	26.0%	16.5%	29.7%
% international	41.1%	41.8%	51.4%	49.3%	46.0%	45.0%	39.2%	42.9%	53.7%	59.5%	63.5%
COURSEWORK MASTER	4,549	4,311	3,997	4,448	5,372	6,560	7,564	8,787	10,032	11,035	10,949
domestic number	1,449	1,541	1,562	1,690	1,780	2,043	2,091	2,023	1,931	1,671	1,646
% domestic female	16.4%	16.7%	17.6%	15.8%	18.7%	19.2%	18.7%	17.5%	17.3%	20.7%	20.7%
international number	3,100	2,770	2,435	2,758	3,592	4,517	5,473	6,764	8,101	9,364	9,303
% international female	16.8%	20.0%	19.4%	18.7%	17.4%	18.6%	20.3%	20.9%	20.2%	19.2%	20.2%
% international	68.1%	64.3%	60.9%	62.0%	66.9%	68.9%	72.4%	77.0%	80.8%	84.9%	85.0%
OTHER POSTGRADUATE	1,103	1,447	1,511	1,448	1,416	1,247	1,021	835	772	639	789
domestic number	787	1,132	1,101	1,186	1,167	1,118	844	682	594	519	609
% domestic female	17.7%	19.8%	21.4%	18.7%	19.6%	16.5%	18.4%	17.3%	19.4%	18.1%	17.2%
international number	316	315	410	262	249	129	177	153	178	120	180
% international female	13.4%	19.4%	13.2%	16.4%	19.3%	16.3%	21.5%	24.8%	19.1%	24.2%	19.4%
% international	28.6%	21.8%	27.1%	18.1%	17.6%	10.3%	17.3%	18.3%	23.1%	18.8%	22.8%
BACHELOR	17,363	19,167	18,741	18,818	20,234	21,048	21,406	21,484	21,218	21,685	21,349
domestic number	12,052	12,541	13,152	13,595	14,817	15,085	14,896	14,390	13,736	14,238	14,291
% domestic female	14.5%	14.4%	13.9%	13.7%	14.4%	15.1%	15.2%	15.7%	16.9%	18.1%	18.6%
international number	5,311	6,626	5,589	5,186	5,417	5,963	6,510	7,094	7,482	7,447	7,058
% international female	17.4%	15.1%	11.9%	17.1%	18.3%	18.4%	21.0%	19.1%	20.3%	18.7%	17.2%
% international	30.6%	34.6%	29.8%	27.8%	26.8%	28.3%	30.4%	33.0%	35.3%	34.3%	33.1%
ASSOC DEG & ADV DIP	1,111	1,514	1,532	1,959	2,094	1,562	1,374	1,372	1,275	1,342	1,302
domestic number	930	1,357	1,257	1,659	1,890	1,370	1,178	1,136	1,031	1,095	995
% domestic female	8.7%	10.0%	8.2%	7.8%	9.3%	8.3%	10.8%	10.1%	10.8%	10.9%	11.6%
international number	181	157	275	300	204	192	196	236	244	247	307
% international female	5.2%	na	7.2%	8.3%	18.6%	4.7%	6.1%	12.7%	10.7%	14.2%	17.9%
% international	16.3%	10.4%	18.0%	15.3%	54.6%	12.3%	14.3%	17.2%	19.1%	18.4%	23.6%
ENABLING & OTHER	1,056	859	1,434	1,307	1,841	2,144	1,988	2,249	2,304	2,263	2,393
domestic number	521	798	811	748	836	909	564	655	631	616	687
% domestic female	28.6%	24.4%	45.3%	32.8%	28.1%	19.4%	14.5%	20.0%	n/a	10.6%	12.1%
international number	535	61	623	559	1,005	1,235	1,424	1,594	1,673	1,647	1,706
% international female	14.0%	12.7%	1.8%	8.8%	8.2%	9.7%	10.5%	12.7%	13.8%	12.6%	12.7%
% international	50.7%	37.6%	43.4%	42.8%	0.0%	57.6%	71.6%	70.9%	72.6%	72.8%	71.3%
ALL COMMENCEMENTS	27,508	28,975	29,199	30,065	33,179	34,864	35,639	36,935	38,121	39,360	39,030
domestic number	16,994	18,352	18,813	19,710	21,386	21,456	20,544	19,801	18,811	18,856	18,910
% domestic female	15.5%	15.8%	15.3%	15.0%	15.6%	15.8%	15.8%	16.1%	16.7%	18.0%	18.4%
international number	10,514	10,623	10,386	10,355	11,793	13,408	15,095	17,134	19,310	20,504	20,120
% international female	17.8%	18.5%	18.1%	17.8%	18.1%	18.4%	19.9%	19.9%	20.2%	19.3%	19.0%
% international	38.2%	36.7%	35.6%	34.4%	35.5%	38.5%	42.4%	46.4%	50.7%	52.1%	51.6%

TABLE 6 DOMESTIC COMMENCEMENTS (ALL AWARD LEVELS) IN ENGINEERING & RELATED TECHNOLOGIES AND IN SELECTED FIELDS, 2009-19

year	Engineering & Related Technologies	% of total	Health	Natural & Physical Science	Information Technology	Law, Business, Society, Creative Arts (several FoEs)	total commencing award programs
2009	16,994	5.5%	49,217	23,633	8,328	167,817	308,821
2010	18,172	5.5%	54,097	26,619	8,704	175,649	329,248
2011	18,813	5.6%	56,628	28,169	9,263	179,222	338,188
2012	19,710	5.4%	61,864	31,847	10,060	190,917	364,197
2013	21,433	5.6%	66,827	33,163	10,292	201,234	384,251
2014	21,456	5.3%	71,419	34,064	11,187	209,246	401,356
2015	20,544	5.2%	75,170	33,639	11,488	209,164	397,296
2016	19,902	4.9%	80,364	35,682	12,347	208,351	405,085
2017	18,816	4.6%	82,657	36,235	14,223	210,302	410,167
2018	18,941	4.6%	82,995	36,828	14,902	204,902	409,594
2019	19,005	4.7%	81,390	36,521	15,365	202,993	408,222

TABLE 7 UNDERGRADUATE DOMESTIC COMMENCEMENTS, ALL FIELDS OF EDUCATION, 2010-19

Field of Education	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Natural & Physical Sciences	22,820	24,486	27,892	29,017	29,890	29,175	31,127	31,666	31,848	31,617
Information Technology	6,713	7,361	7,942	8,048	9,098	9,504	9,922	11,529	11,933	12,008
Engineering & Rel'd Technologies	14,186	14,706	15,489	17,123	16,949	16,545	16,027	15,382	15,990	15,937
Architecture & Building	5,746	6,116	6,256	6,232	6,054	6,662	7,059	7,611	8,165	8,413
Agriculture, Envir'l & Related Studies	3,946	3,916	3,900	4,073	3,840	3,536	3,652	3,404	3,700	4,411
Health	37,321	38,458	42,224	47,412	50,509	54,166	58,969	60,317	60,276	57,515
Education	22,473	22,572	25,322	25,765	27,076	26,139	24,761	24,817	22,605	22,421
Management & Commerce	38,229	39,650	43,569	45,447	49,695	48,398	47,890	48,432	47,928	44,573
Society & Culture	61,914	62,524	67,458	71,042	71,925	75,422	74,951	78,332	75,798	74,385
Creative Arts	23,100	24,076	25,679	27,504	27,054	27,481	28,351	28,738	27,081	26,102
Food, Hospitality & Personal Services	59	64	47	33	21	16	17	148	96	68
TOTAL	236,507	243,929	265,778	281,696	292,111	297,044	302,726	312,393	282,914	275,466
Proportion in Engineering, %	6.0%	6.0%	5.8%	6.1%	5.8%	5.6%	5.3%	4.9%	5.7%	5.8%

TABLE 8 ADMISSION OF DOMESTIC STUDENTS INTO UNDERGRADUATE DEGREES IN ENGINEERING & RELATED TECHNOLOGIES, 2009 – 19

(a) Basis of Admission into Bachelors Degrees, 2009 - 2019

Year	Total	Higher Ed completed/in-complete in Aus. or o/s	TAFE/VET award completed or incomplete	Completion of final year of secondary schooling, in school or TAFE (Aus or o/s)	Other
2009	12,052	1,851	727	8,125	1,349
2010	no data				
2011	13,154	2,435	978	8,542	1,181
2012	13,595	2,604	904	8,835	1,252
2013	14,817	2,989	1,184	9,119	1,525
2014	15,085	3,665	1,013	8,791	1,534
2015	14,896	3,357	964	8,686	1,889
2016	14,390	3,323	1,046	8,332	1,689
2017	13,736	2,978	897	8,461	1,400
2018	14,228	2,989	872	9,027	1,340
2019 total	14,291	2,936	907	9,024	1,424
females	2,661	523	112	1,823	203
AS PERCENTAGES					
2009		15.4%	6.0%	67.4%	11.2%
2010					
2011		18.5%	7.4%	64.9%	9.0%
2012		19.2%	6.6%	65.0%	9.2%
2013		20.2%	8.0%	61.5%	10.3%
2014		24.3%	6.7%	58.3%	10.2%
2015		22.5%	6.5%	58.3%	12.7%
2016		23.1%	7.3%	57.9%	11.7%
2017		21.7%	6.5%	61.6%	10.2%
2018		21.0%	6.1%	63.4%	9.4%
2019 total		20.5%	6.3%	63.1%	10.0%
females		19.7%	4.2%	68.5%	7.7%

‘Other’ covers admission on the basis of ‘mature age special provisions’, ‘professional qualifications’, and ‘other’

(b) ATAR distributions of Undergraduate Offers to school leavers in Engineering and other selected fields, 2019

field of education	< 50	50.05 – 60.00	60.05 – 70.00	70.05 – 80.00	80.05 – 90.00	> 90.05	Number of ATAR offers	% of ATAR offers
Natural & Physical Sciences	2.8%	5.0%	10.0%	16.4%	27.3%	38.5%	15,691	50.6%
Information Technology	7.6%	13.2%	19.8%	22.0%	22.1%	15.3%	3,616	40.9%
Engineering 2019	1.8%	3.6%	7.8%	17.6%	27.3%	41.7%	9,146	57.6%
Engineering 2018	2.0%	4.2%	8.2%	17.9%	27.1%	40.6%	9,921	58.4%
Engineering 2017	2.0%	3.4%	8.5%	15.0%	30.1%	41.1%	9,619	57.8%
Health	5.5%	9.1%	15.6%	22.0%	22.4%	25.3%	21,066	33.1%
Management & Commerce	7.0%	10.0%	14.7%	19.5%	22.8%	26.1%	16,281	44.8%
All fields	6.2%	9.1%	14.4%	20.4%	23.8%	26.0%	110,324	39.9%

TABLE 9 TOP 16 COUNTRIES OF ORIGIN OF ONSHORE COMMENCING STUDENTS IN ENGINEERING & RELATED TECHNOLOGIES, 2018 and 2019, BY BROAD PROGRAM LEVEL

	P/G Research & Coursew'k	Bachelors (inc Hons)	Other	Total	P/G Research & Coursew'k	Bachelor s (inc Hons)	Other	Total	overall rank
2019									
China (excludes SARs and Taiwan Province)	3,113	1,646	501	5,260	34.5%	35.2%	31.4%	34.4%	1
India	3,380	495	145	4,020	37.5%	10.6%	9.1%	26.3%	2
Pakistan	350	188	185	723	3.9%	4.0%	11.6%	4.7%	3
Sri Lanka	187	366	79	632	2.1%	7.8%	4.9%	4.1%	4
Viet Nam	116	294	79	444	1.3%	5.3%	4.9%	2.9%	5
Nepal	243	124	30	419	3.4%	1.8%	1.7%	2.7%	6
Saudi Arabia	88	248	50	386	1.0%	5.3%	3.1%	2.5%	7
Malaysia	91	262	35	383	1.0%	5.6%	1.9%	2.5%	8
Bangladesh	161	100	34	295	1.8%	2.1%	2.1%	1.9%	9
Indonesia	97	102	81	280	1.1%	2.2%	5.1%	1.8%	10
Hong Kong (SAR)	25	149	32	206	0.3%	3.2%	2.0%	1.3%	11
Iran	154	14	6	174	1.7%	0.3%	0.4%	1.1%	12
Singapore	11	80	13	104	0.1%	1.7%	0.8%	0.7%	13
Thailand	46	43	14	103	0.5%	0.9%	0.9%	0.7%	14
Kuwait	11	26	6	43	0.1%	0.6%	0.4%	0.3%	15
Iraq	< 5	< 5	0	5	0	0	0.0%	0.0%	16
All other Countries	872	619	315	1,806	9.7%	13.2%	19.7%	11.8%	
Total on-shore	9,012	4,674	1,597	15,283					
Total international (Table 5)	11,049	7,058	2,013	20,120					
2018									
China (excludes SARs and Taiwan Province)	3,094	1,805	596	5,495	34.8%	36.8%	37.4%	35.7%	1
India	3,384	506	117	4,007	38.1%	10.3%	7.3%	26.1%	2
Pakistan	422	218	148	788	4.8%	4.4%	9.3%	5.1%	3
Sri Lanka	136	277	64	477	1.5%	5.7%	4.0%	3.1%	4
Malaysia	73	323	35	431	0.8%	6.6%	2.2%	2.8%	5
Viet Nam	94	252	84	430	1.1%	5.1%	5.3%	2.8%	6
Nepal	243	124	27	394	2.7%	2.5%	1.7%	2.6%	7
Bangladesh	152	126	52	330	1.7%	2.6%	3.3%	2.1%	8
Indonesia	99	101	105	305	1.1%	2.1%	6.6%	2.0%	9
Hong Kong (SAR)	27	160	42	229	0.3%	3.3%	2.6%	1.5%	10
Saudi Arabia	97	95	20	212	1.1%	1.9%	1.3%	1.4%	11
Iran	172	23	5	200	1.9%	0.5%	0.3%	1.3%	12
Singapore	14	108	21	143	0.2%	2.2%	1.3%	0.9%	13
Thailand	39	43	5	87	0.4%	0.9%	0.3%	0.6%	14
Kuwait	7	53	12	72	0.1%	1.1%	0.8%	0.5%	15
Iraq	13	12	0	25	0.1%	0.2%	0.0%	0.2%	16
All other Countries	817	673	261	1,751	9.2%	13.7%	16.4%	11.4%	
Total on-shore	8,883	4,899	1,594	15,376					
Total international (Table 5)	11,163	7,447	1,894	20,504					

TABLE 10 INDIGENOUS COMMENCEMENTS AND COMPLETIONS IN ENGINEERING & RELATED TECHNOLOGIES, 2015, 2017 and 2019

Commencements

	P/G by Research	P/G C'rsewk	Bach. (inc Hons)	Other	Total		
	Persons	Persons	Persons	Persons	Male	Female	Persons
2015							
ACT	0	0	0	0	0	0	0
NSW	< 5	< 5	28	< 5	np	< 5	32
NT	0	0	< 5	< 5	np	< 5	7
QLD	< 5	< 5	45	14	52	12	64
SA	0	0	7	< 5	8	0	8
TAS	0	< 5	11	0	12	0	12
VIC	0	< 5	7	< 5	np	< 5	15
WA	0	< 5	6	0	np	< 5	7
Total	< 5	12	108	23	124	21	145
2017							
ACT	< 5		0	0	0	< 5	< 5
NSW	9		38	<< 10	42	8	50
NT	0		< 5	<< 10	< 5	< 5	< 5
QLD	< 5		65	7	58	18	76
SA	< 5		10	< 5	13	< 5	14
TAS	< 5		5	0	6	0	6
VIC	< 5		12	<< 10	15	< 5	17
WA	< 5		12	0	9	5	14
Total	21		143	< 19	146	36	182
2019							
ACT	0		< 5	0	< 5	0	< 5
NSW	< 5		51	<< 10	50	10	60
NT	0		< 5	< 10	7	< 5	11
QLD	6		49	13	52	16	68
SA	0		6	<< 10	10	< 5	12
TAS	0		< 5	0	< 5	0	< 5
VIC	6		17	6	28	< 5	29
WA	0		6	0	5	< 5	6
Total	16		137	38	156	35	191

Completions

	P/G by Research	P/G C'rsewk	Bach. (inc Hons)	Other	Total		
	Persons	Persons	Persons	Persons	Male	Female	Persons
2015							
ACT	< 5	0	0	0	0	< 5	< 5
NSW	0	5	12	0	np	< 5	17
NT	0	0	0	< 5	< 5	0	< 5
QLD	0	< 5	13	0	np	< 5	16
SA	0	0	< 5	0	< 5	0	< 5
TAS	0	< 5	< 5	0	< 5	0	< 5
VIC	< 5	< 5	< 5	< 5	np	< 5	7
WA	0	0	< 5	0	< 5	0	< 5
Total	< 5	11	34	< 5	43	6	49
2017							
ACT	0		0	0	0	0	0
NSW	< 5		8	< 5	9	3	12
NT	0		0	0	0	0	0
QLD	< 5		19	<< 5	23	2	25
SA	0		< 5	<< 5	< 5	0	< 5
TAS	0		< 5	< 5	< 5	0	< 5
VIC	0		< 5	0	< 5	0	< 5
WA	< 5		< 5	0	5	0	5
Total	8		34	< 10	45	5	50
2019							
ACT	0		0	0	0	0	0
NSW	< 5		7	< 5	10	< 5	13
NT	0		0	< 5	< 5	0	< 5
QLD	< 5		14	<< 10	17	6	23
SA	0		6	0	6	0	6
TAS	0		< 5	0	< 5	0	< 5
VIC	< 5		6	<< 10	8	< 5	10
WA	< 5		< 5	0	< 5	< 5	< 5
Total	8		37	13	46	12	58

TABLE 11 STUDENT, GRADUATE, AND EMPLOYER SATISFACTION

(a) Undergraduate student satisfaction surveys, 2018 and 2019

Percentages of students expressing agreement or strong agreement with a relevant satisfaction statement

Year Field of education	Skills Development	Learner Engagement	Teaching Quality	Student Support	Learning Resources	Overall Experience
2018						
Science & mathematics	80	61	84	75	88	81
Computing & Info Syst.	75	58	76	73	83	73
Engineering	80	66	77	71	84	75
All fields	81	60	81	73	84	79
2019						
Science & mathematics	80	61	83	75	88	80
Computing & Info Syst.	74	58	74	73	81	72
Engineering	78	65	75	71	83	73
All Fields	81	60	81	74	84	78

(b) Postgraduate coursework student satisfaction surveys, 2018 and 2019

Percentages of students expressing agreement or strong agreement with a relevant satisfaction statement

Year Field of education	Skills Development	Learner Engagement	Teaching Quality	Student Support	Learning Resources	Overall Experience
2018						
Engineering	80	59	78	73	88	75
All fields	81	53	81	73	83	76
2019						
Engineering	80	59	78	75	88	74
All Fields	81	54	80	74	84	76

(c) Graduate satisfaction surveys 2019 and 2020

Percentages of graduates expressing agreement or strong agreement with a relevant satisfaction statement

	Overall satisfact	Good teaching	Generic skills	Super- vision	Intellect'l climate	Skills develop't	Infra-structre	Thesis examin'n	Goals & expect's	Ind. & ext. eng
2019										
U/G Engineering	74.4	49.4	83.8							
Science & Mathematics	84.0	67.5	85.7							
Computing & Info Syst.	72.9	59.7	77.6							
Pharmacy	80.5	64.6	80.8							
Business & Management	78.0	58.6	79.7							
U/G All fields	80.1	63.7	82.4							
P/G Coursework Eng.	76	63	82							
P/G Coursework All fields	81.8	69.4	79.7							
P/G Research Eng.	86			83	68	94	82	83	93	67
P/G Research All fields	85.5			83.1	62.7	92.5	75.8	80.6	91.7	56.4
2020										
U/G Engineering	75.3	51.8	84.1							
Science & Mathematics	84.1	70.3	86.7							
Computing & Info Syst.	74.2	58.1	78.0							
Pharmacy	83.7	68.8	80.7							
Business & Management	78.6	60.3	80.3							
U/G All fields	80.7	65.7	82.9							
P/G Coursework Eng.	77	64	85							
P/G Coursework All fields	81.8	69.4	79.7							
P/G Research Eng.	88			80	69	93	82	82	92	67
P/G Research All fields	85.8			82.3	64.4	92.5	76.8	81.5	91.3	57.9

(d) Employer Satisfaction Surveys 2017 - 2019 – skills areas, selected fields of education.

Percentages of employers expressing agreement or strong agreement with a relevant statement on graduate skills.

Previous year data in parentheses.

Field of education	Foundation	Adaptive	Collaborative	Technical	Employability	Overall satisfaction
2017 All fields	93.4	90.1	85.9	93.3	85.0	83.6
2018 All fields	93.5	89.9	88.7	93.8	86.5	84.8
2019 All fields	92.7	89.3	87.8	92.7	85.4	84.0
Engineering & Related Technologies	97.1 (95.0)	90.4 (88.3)	91.7 (88.6)	97.1 (94.4)	88.2 (83.3)	89.9 (86.9)
Natural & Physical Sciences	95.4 (97.3)	91.3 (90.9)	92.3 (93.0)	94.3 (96.3)	90.0 (89.4)	82.8 (87.0)
Information Technology	91.5 (92.9)	86.9 (89.7)	87.9 (90.5)	92.3 (94.4)	82.1 (84.6)	89.9 (87.2)
Health	93.9 (93.5)	90.1 (89.1)	88.1 (86.8)	94.4 (93.9)	84.1 (84.8)	86.9 (86.6)
Management & Commerce	92.5 (92.8)	89.3 (88.4)	87.8 (87.4)	92.7 (92.0)	85.4 (88.2)	84.0 (83.4)

(e) Employer Satisfaction Survey 2019

Ratings by graduates and their supervisors, selected fields of education. Previous year data in parentheses.

Field of education	% of respondents rating qualification 'important' or 'very important' for current employment		% of respondents rating 'well' or 'very well' the extent to which qualification prepared graduates for current employment	
	Graduates	Supervisors	Graduates	Supervisors
All fields	53.2 (56.5)	62.3 (63.8)	87.1 (88.1)	92.2 (92.1)
Engineering & Related Technologies	59.2 (59.2)	67.7 (67.7)	87.5 (89.0)	92.7 (92.3)
Natural & Physical Sciences	47.2 (46.7)	60.1 (61.5)	81.8 (84.2)	93.7 (91.0)
Information Technology	41.1 (47.8)	48.4 (45.3)	84.4 (85.4)	90.4 (91.6)
Health	70.2 (74.2)	79.2 (79.3)	89.9 (92.5)	94.9 (93.4)
Management & Commerce	42.3 (39.1)	48.1 (49.4)	87.7 (87.3)	92.1 (91.3)

TABLE 12 GRADUATE OUTCOMES: EMPLOYMENT STATUS AND MEDIAN SALARIES

(a) Short-term employment status, surveys 2018-20

Year of Survey (previous year graduates)	% in full-time study	% in work, of all available for any work	% in FT work, of all available for FT work	% in PT work, of all employed	% in PT work seeking more hours	% in PT work not seeking more hours	% of FT employed reporting skills not fully used		% of all employed reporting skills not fully used	
							in general	because of lack of jobs in area of expertise	in general	because of lack of jobs in area of expertise
2018										
U/G Engineering	15.0	88.2	83.1	16.4	9.1	5.6	21.6	26.4	29.7	25.6
ALL U/G	18.7	87.0	72.9	37.3	19.2	14.0	27.1	23.5	38.9	23.0
P/G C'swk Engin'g		88.8	84.6				32.1	21.5	34.6	23.0
ALL P/G Coursew'k		92.9	86.9				26.9	22.7	29.2	22.9
P/G Res'ch Engin'g		90.7	85.0				24.8	41.1	27.0	36.7
ALL Research		91.8	82.3				24.5	33.6	27.9	35.9
2019										
U/G Engineering	12.8	88.4	84.8	14.6	8.1	4.6	19.8	22.0	26.6	19.8
ALL U/G	18.9	86.8	72.2	38.1	19.8	14.1	28.3	20.8	40.4	19.6
P/G C'swk Engin'g		89	85				28.7	24.7	32.2	25.1
ALL P/G Coursew'k	6.0	92.7	86.8				26.6	19.6	29.0	20.0
P/G Res'ch Engin'g	-	87	80				20.9	39.7	24.0	35.4
ALL Research	5.8	90.7	81.1				25.8	37.5	29.5	36.4
2020										
U/G Engineering	11.1	87.6	83.0	14	8	4	21	18	27	21
ALL U/G	18.5	85.1	68.7	41.0	21.8	16.5	28.1	20.1	40.9	19.5
P/G C'swk Engin'g	-	89	86				31	18	34	11
ALL P/G Coursew'k	6.6	91.6	85.6				27.2	17.3	29.9	18.3
P/G Res'ch Engin'g	-	86	81				26	32	27	32
ALL Research	6.9	90.0	80.1				25.6	30.0	28.2	32.2

(b) Short-term graduate salaries (medians) for full-time work, surveys, 2017-20

Program level	2017		2018		2019		2020	
	male	female	male	female	male	female	male	female
U/G Engineering	\$ 63,500	\$ 65,000	\$ 65,000	\$ 65,000	\$ 67,800	\$ 67,000	\$ 69,400	\$ 70,000
ALL U/G	\$ 60,100	\$ 59,000	\$ 63,000	\$ 60,000	\$ 64,700	\$ 61,500	\$ 65,000	\$ 63,400
P/G Coursework Engineering	\$ 90,000	\$ 75,000	\$ 90,000	\$ 79,100	\$ 87,500	\$ 80,000	\$ 100,000	\$ 93,000
ALL P/G	\$ 91,000	\$ 76,000	\$ 92,500	\$ 79,000	\$ 95,000	\$ 81,300	\$ 96,000	\$ 85,300
P/G Research Engineering	\$ 87,700	\$ 83,400	\$ 90,000	\$ 83,000	\$ 90,000	\$ 90,500	\$ 93,900	\$ 90,000
ALL P/G Research	\$ 88,300	\$ 86,000	\$ 90,200	\$ 90,000	\$ 92,000	\$ 90,000	\$ 95,000	\$ 91,500

Note: undergraduate figures are for graduates in first full time employment, age less than 25

(c) Short-term median salary comparisons, undergraduate degrees, surveys 2014-20

Program field	2014	2015	2016	2017	2018	2019	2020
Dentistry	\$ 75,000	\$ 80,000	\$ 83,500	\$ 78,300	\$ 83,700	\$ 88,200	\$ 84,000
Medicine	\$ 60,000	\$ 65,000	\$ 69,200	\$ 70,300	\$ 73,000	\$ 73,100	\$ 75,000
Engineering	\$ 62,000	\$ 60,000	\$ 62,600	\$ 64,000	\$ 65,000	\$ 67,500	\$ 69,400
Computing & Information Systems	\$ 55,000	\$ 54,000	\$ 60,000	\$ 59,900	\$ 60,000	\$ 64,000	\$ 65,000
Science & Mathematics	\$ 60,000	\$ 60,000	\$ 55,200	\$ 57,500	\$ 61,000	\$ 60,000	\$ 64,000
Business & Management	\$ 50,000	\$ 50,000	\$ 55,000	\$ 55,200	\$ 58,000	\$ 59,500	\$ 60,000

(d) Longitudinal employment surveys, 2019 and 2020

Level measure	Engineering, 2019		Engineering, 2020		All fields, 2020		gain for Engineering med-short (2017-20)
	short	medium	short	medium	short	medium	
Undergraduate							
F/T employment	78%	95%	82%	95%	73%	90%	18.3%
Overall Employment	85%	96%	87%	96%	87%	93%	8.9%
Median Salary	\$ 62,600	\$ 82,000	\$ 65,000	\$ 84,000	\$ 60,000	\$ 75,000	\$ 16,725
Roles (of Overall Employed)							
managers	7.2%	7.7%	6.3%	8.0%	5.4%	8.3%	5.3%
professionals	68.3%	79.3%	71.5%	79.0%	55.2%	68.4%	4.3%
other	24.5%	13.0%	22.2%	13.0%	39.4%	23.3%	-9.6%
Postgraduate Coursework							
F/T employment	84.0%	93.7%	90.6%	95.1%	86.2%	94.1%	9.3%
Overall Employment	88.4%	95.5%	89.6%	92.4%	92.9%	95.8%	5.5%
Median Salary	\$ 91,700	\$ 114,900	\$ 88,000	\$ 106,000	\$ 83,300	\$ 98,000	\$ 16,400
Roles (of Overall Employed)							
managers	21.8%	19.8%	12.5%	18.6%	15.1%	17.5%	1.4%
professionals	62.7%	64.3%	67.2%	64.3%	69.6%	70.6%	-0.4%
other	15.6%	15.9%	20.2%	17.2%	15.3%	12.0%	-1.4%
Postgraduate Research							
F/T employment	77.6%	93.2%	75.4%	90.8%	81.4%	90.1%	16.0%
Overall Employment	89.5%	94.9%	86.2%	92.8%	92.9%	95.8%	7.1%
Median Salary	\$ 80,500	\$ 94,000	\$ 90,000	\$ 105,000	\$ 89,500	\$ 103,000	\$ 16,000
Roles (of Overall Employed)							
managers	8.1%	7.6%	13.6%	8.1%	9.0%	10.0%	-3.0%
professionals	85.9%	84.8%	80.8%	85.5%	83.9%	82.9%	1.2%
other	6%	8%	6%	7%	7%	6%	0.9%

TABLE 13 ACADEMIC STAFF (FTE) IN ENGINEERING & RELATED TECHNOLOGIES, for 26 ACED Members (see note), 2009-19 (not including casual staffing)

(c) Academic staff (FTE) by gender and functional category

staff categories	2009	2010	2011	2012	2013	2014*	2015	2016	2017	2018	2019
academics, male											
teaching-only	51	69	100	98	76	67	88	127	121	130	135
research-only	1,082	1,051	1,194	1,194	1,295	1,279	1,417	1,344	1,304	1,326	1,419
teaching & research	1,611	1,602	1,747	1,759	1,755	1,824	1,919	1,907	1,839	1,639	1,642
sub-total, male	2,744	2,722	3,040	3,052	3,126	3,170	3,424	3,378	3,264	3,095	3,196
academics, female											
teaching-only	9	13	16	20	18	17	24	33	38	43	55
research-only	315	333	387	383	399	371	399	360	366	356	369
teaching & research	218	236	252	248	257	288	320	328	307	310	304
sub-total, female	543	621	656	652	675	676	743	721	711	709	728
total academics	3,287	3,343	3,696	3,704	3,801	3,846	4,167	4,099	3,975	3,804	3,924
% research-only	42.5%	41.4%	42.8%	42.6%	44.6%	42.9%	43.6%	41.6%	42.0%	44.2%	45.6%
% female	16.5%	18.6%	17.7%	17.6%	17.8%	17.6%	17.8%	17.6%	17.9%	18.6%	18.6%
total teaching	1,889	1,920	2,115	2,125	2,106	2,196	2,351	2,395	2,305	2,122	2,136

(d) Academic staff (FTE) by gender and level of appointment

	D, E	C	B	< B	other
2013 Men	907	692	796	553	178
Women	104	104	204	169	95
2014 Men	951	675	826	537	184
Women	115	111	201	156	85
2015 Men	1031	751	908	636	99
Women	127	132	212	201	61
2016 Men	1078	735	867	618	80
Women	145	132	198	191	56
2017 Men	1061	693	764	663	83
Women	132	129	195	208	47
2018 Men	989	651	696	689	73
Women	132	127	215	196	38
2019 Men, Total	1026	657	708	735	69
Women, Total	148	117	222	202	38
Men, Research	172	125	404	649	69
Women, Research	28	34	95	174	38

Note: Nine ACED member universities have not provided staffing data for FoE3 to the Higher Education Statistics Unit. The total FTE in Engineering for 2019 are estimated to be approximately 2,450 (teaching) and 1,920 (research).

TABLE 14 STUDENT SUMMARY DATA FOR ACED MEMBERS, 2019

University	Commencing students					Completions			Total enrolled students			Load
	domestic		international		total	dom	int'nat	total	dom	int'nat	total	EFTSL
	#	% fem	#	%fem								
Charles Sturt Uni	89	21.3%	0		89	18	0	18	104	0	104	83
Macquarie Uni	296	16.2%	288	15.6%	584	91	83	174	934	578	1,512	787
Southern Cross Uni	65	12.3%	138	8.0%	203	62	30	92	206	366	572	120
The Uni of Newcastle	603	14.3%	223	19.3%	826	228	139	367	1,968	789	2,757	1,918
The Uni of Sydney	703	31.7%	1,213	34.4%	1,916	560	825	1,385	3,085	3,223	6,308	4,975
UNSW (inc. Canberra)	2,124	22.9%	2,578	25.6%	4,702	1,496	2,250	3,746	7,843	7,312	15,155	9,227
Uni of Tech Sydney	1,049	19.9%	862	15.7%	1,911	467	783	1,250	4,076	2,612	6,688	5,444
Uni of Wollongong	445	18.2%	640	15.6%	1,085	285	547	832	1,642	1,961	3,603	2,565
Western Sydney Uni	668	14.1%	436	8.9%	1,104	214	254	468	2,014	1,186	3,200	2,639
Deakin University	325	12.9%	667	13.0%	992	146	461	607	1,251	1,841	3,092	2,036
Federation Uni Aust	133	16.5%	119	9.2%	252	66	36	102	368	341	709	375
La Trobe University	76	13.2%	317	9.5%	393	46	95	141	289	610	899	692
Monash University	890	22.8%	1,491	23.4%	2,381	659	1,014	1,673	4,335	5,060	9,395	5,963
RMIT University	1,895	15.5%	1,745	15.9%	3,640	1,147	1,345	2,492	5,645	5,178	10,823	7,033
Swinburne U of Tech	925	16.5%	1,129	16.3%	2,054	600	817	1,417	3,195	3,463	6,658	4,735
The Uni of Melbourne	372	26.3%	993	33.0%	1,365	395	1,027	1,422	1,211	2,837	4,048	3,851
Victoria University	152	9.2%	185	15.7%	337	81	161	242	471	520	991	932
CQ University	412	16.0%	249	5.6%	661	251	207	458	1,152	660	1,812	1,054
Griffith University	696	19.8%	352	16.5%	1,048	271	193	464	1,763	865	2,628	1,647
James Cook University	149	14.8%	73	8.2%	222	76	10	86	488	110	598	384
Queensland U of Tech	1,059	20.9%	438	14.4%	1,497	564	286	850	4,174	1,126	5,300	3,129
The Uni of Queensl'nd	982	23.3%	583	25.6%	1,565	667	406	1,073	3,765	1,716	5,481	4,171
Uni of Southern Qld	906	12.1%	152	17.1%	1,058	428	99	527	3,279	408	3,687	1,478
Uni of Sunshine Coast	101	13.9%	16	0.0%	117	49	3	52	400	57	457	215
Curtin Uni of Tech	804	14.3%	675	20.9%	1,479	467	713	1,180	2,903	2,776	5,679	3,822
Edith Cowan Uni	244	14.8%	589	13.9%	833	89	342	431	694	1,469	2,163	1,174
Murdoch University	88	30.7%	128	19.5%	216	70	39	109	374	231	605	307
The University of WA	299	14.7%	262	16.4%	561	626	1,094	1,720	984	770	1,754	1,758
Flinders University	215	19.5%	107	19.6%	322	108	62	170	710	256	966	663
The Uni of Adelaide	634	21.1%	769	19.6%	1,403	438	366	804	2,316	1,847	4,163	2,581
Uni of South Australia	369	20.6%	568	15.3%	937	237	277	514	1,178	1,264	2,442	1,592
Uni of Tasmania	280	11.8%	245	11.4%	525	235	171	406	839	667	1,506	1,027
Charles Darwin Uni	149	25.5%	62	16.1%	211	27	43	70	389	212	601	321
The Aust National Uni	185	24.3%	186	23.7%	371	142	188	330	728	677	1,405	894
Uni of Canberra	88	22.7%	17	35.3%	105	16	4	20	154	33	187	153
TOTAL 2019	18,470	18.9%	18,495	20.0%	36,965	11,322	14,370	25,692	64,927	53,021	117,948	79,778
TOTAL 2018	18,351	18.2%	18,633	19.2%	36,984	11,671	12,486	24,157	65,130	50,670	115,800	78,526
% change 2018 to 2019	0.6%	0.70%	-0.7%	0.80%	-0.1%	-3.0%	18.0%	6.4%	-0.3%	4.6%	1.9%	1.6%

Notes

Data source: Higher Education Statistics uCube website for FoE03 Engineering and Related Technologies

Engineering and Related Technologies includes surveying, maritime, and civil aviation, and may not include software engineering, if the university classifies the latter in IT

UNSW Canberra is a member of ACED but data are included with UNSW Sydney

Totals are a few percent less than those in Tables 1, 3 and 6 because of non-inclusion of private and TAFE providers.

TABLE 15 SUMMARY OF COURSEWORK PROGRAMS OFFERED IN AUSTRALIA BY ACED MEMBERS, 2019

University (ACED member)	EA accredited programs					advanced "MEngSci" awards	"M-mgt" awards
	Assoc Deg /Adv Dip	BEngTech branches	BEng(Hons) branches	dual degree options	MEng branches		
Charles Sturt University	-	1 P	-	-	1 P	-	-
Macquarie University	-	-	5 F, 1 P	3	-	-	-
Southern Cross University	-	-	1 F, 3 P	-	-	-	2
University of New South Wales (NSW)	-	-	21 F, 1 P	5	5 F, 1 P	25	2
The University of Newcastle	-	-	8 F, 1 P	9	8 P	9	1
The University of Wollongong	-	-	10 F	8	5 F, 5 P	1	2
University of Sydney	-	-	16 F	7	8 F, 4 P	14	2
University of Technology Sydney	-	-	8 F, 2P	5	3 P	10	2
Western Sydney Uniy (inc. College)	4 P	5 P	5 F	6	6 F	-	-
Deakin University	-	-	4 F	-	-	3	1
Federation University Australia	-	-	6 F, 1 P	-3	3 F	1	1
La Trobe University	-	-	2 P	-	-	2	1
Monash University	-	-	9 F	8	-	9	1
RMIT University	7	-	12 F, 1 P	5	1 P	8-	
Swinburne University of Technology	-	-	8 F, 1 P	3	-	17	1
The University of Melbourne	-	-	-	-	11 F, 2P	4	1
Victoria University	-	-	4 F, 1P-	-	-	5	-
Central Queensland University	3 F, 1 P	3 F	3 F	-	3 P	-	3
Griffith University	-	-	6 F	4	-	4	2
James Cook University	-	-	4 F	2	-	-	-
Queensland University of Technology	-	-	8 F	4	4 P	2	2
The University of Queensland	-	-	8 F	9	6 P	7	1
University of Southern Queensland	6 F, 3P	8 F	9 F	3	13 F, 2P	1-	2
University of the Sunshine Coast	-	-	2 F	1	-	-	-
Curtin University of Technology	-	1 F	8 F	2	-	11	1
Edith Cowan University	--	1 F	13 F, 3 P	-	6 F, 4 P-	-	-
Murdoch University	1 P	-	5 F, 1P	-	-	3	-
The University of Western Australia	-	-	-	-	6 F, 1 P	-	1
Flinders University	-	-	8 F	5	2 F, 2P	6	-
The University of Adelaide	-	-	17 F	5	9 F-	3	-
University of South Australia	-	-5	5 F, 1 P	-	-	5	2
University of Tasmania (inc. AMC)	-	-	7 F	1	2 P	-	-
Charles Darwin University	-	1 F, 3 P	4 F	-	4 F	-	-
The Australian National University	-	-	5 F, 1P	14	3P	4-	2
University of Canberra	-	-	1 F	-	-	2	-
UNSW Canberra at ADFA	-	2 F	4 F	2	-	4	1

Notes:

- EA accreditation status from EA weblist, viewed 22 Jan 2019 F: Full Accreditation, P: Provisional Accreditation
- "MEngSci" and "M-mgt" programs from provider websites.
- "Branches": the number of branches of engineering covered (not necessarily the total number of accredited programs); double majors are not counted separately from constituent single majors.
- "Dual degrees": the number of areas in which an additional Bachelors degree outside engineering may be taken (includes "dual", "combined", "double" and "concurrent" models).
- UNSW and UQ offer MEng extensions to selected BEng(Hons) degrees.
- UTS offers a BEng(Hons) Diploma of Engineering Practice including extended industrial experience placement(s), this restricts dual degrees options.
- CQU offers a BEng(Hons) Diploma of Professional Practice (Co-op Engineering) including extended industry placements

TABLE 16 ACCREDITED BENG(HONS) AND MENG PROGRAMS BY BRANCH OF ENGINEERING, OFFERED BY ACED MEMBERS, 2019

(a) In Australia

ACED member	Civil	Environmental	Chemical, Materials	Mining, Met, Petroleum	Electrical, Renew/Energy	Electronic, Comp Syst, Telecoms	Software	Biomedical	Mechanical, Manuf, Ind	Aerospace	Mechatronics, Robotics	Naval Arch, Mar, Ocean
Charles Sturt U	1M					3B	1B		1B			1B
Macquarie									1B			
Southern Cross U	2B ¹⁰	1B							1B			
UNSW (NSW)	4B ¹⁵ , 1M	1B, 1M	5B ¹⁶	4B ¹⁶	2B ¹⁷ , 1M	2B, 1M	2B ¹⁸		2B, 1M	1B	1B	1B
U of Newcastle	1B ¹⁹ , 1M	1B, 1M	1B, 1M		2B, 1M ⁴	1B ¹⁹ , 1M	1B, 1M		1B ¹⁹ , 1M		1B ¹⁹ , 1M	
U of Wollongong ²⁶	1B, 1M	1B, 1M	1B, 1M	1B, 1M	1B, 1M	2B, 2M		1B	1B, 2M		1B, 1M	
U of Sydney	4B, 3M	1B	1B, 1M		2B, 2M	2B, 1M	1B, 1M	1B, 1M	1B ²³ , 2M	2B, 1M	1B ²³	
UTS ³	1B, 1M	1B			2B	1B		1B, 1M	3B ²⁴ , 1M		1B	
WSU	2B, 1M	1M			1B, 1M	1M			1B, 1M		1B, 1M	
Deakin U	1B				1B ⁴				1B		1B	
Federation U	1B, 1M			1B, 1M					1B, 1M			
La Trobe	1B								1B			
Monash	1B	1B	2B		1B ⁶		1B		1B	1B	1B	
RMIT	1B	1B	1B		2B, 1M ⁴	3B		1B	3B ⁹	1B		
Swinburne	1B				1B ⁴	2B	1B	1B	2B ¹¹		1B	
U of Melbourne	4M ¹⁴	1M	3M		1M ⁴		1M	1M	1M		1M	
VU	2B ²⁵				2B ⁴				1B			
CQU ³	1B, 1M				1B, 1M				1B, 1M			
Griffith	1B				1B ⁴				1B			
JCU	1B		1B		1B ⁴				1B			
QUT	1B		1B		1B, 2M	1B		1B	1B, 2M	1B ⁸	1B	
U of Queensland ²⁰	2B, 2M	1B	5B, 1M	2B	1B, 1M	1B	1B, 1M	1B	2B, 1M	1B	1B	
USQ ²²	1B, 3M ¹⁵	1B, 1M			2B, 2M ⁴	1B			2B, 2M ²¹		2B	
U Sunshine Coast	1B								1B			
Curtin	1B		3B	1B	1B ⁴				1B		1B	
ECU	1B, 1M	2B ⁵	1B, 1M	1M	2B, 2M	2B, 2M			1B, 1M		2B, 2M	3B ¹
Murdoch		1B	1B		2B	2B ⁷						
UWA	1M	1M	1M	1M	1M ⁴		1M		1M			
Flinders	1B, 1M		1M		1B	2B, 1B	1B	1B, 1M	1B		1B	
U of Adelaide	3B, 2M ¹²		3B, 1M	6B ¹² , 1M	2B ⁴ , 1M	2B ¹² , 1M	1B		6B, 1M	1M	1B, 1M	
UniSA	2B				2B ⁴				2B		2B	
UTas (inc. AMC)	1B, 1M				2B ⁴	1B			1B			3B, 1M
CDU	1B, 1M		1B, 1M		B ⁴ , 1M ⁴				1B, 1M			
ANU					1B, 1M	1B, 1M	2B ²	1B	1B		1B, 1M	
Canberra						1B ¹³						
UNSW (Canberra)	1B				1B				1B	1B		

- Notes:**
 Branches are taken from the Engineers Australia Accredited Program Listing, Jan 2020. B: Bachelor (Honours); M: Master degree
1. Joint with UTas (AMC)
 2. Includes one named "Photonic Systems"
 3. Also offered in co-op mode with an additional Diploma
 4. Includes at least one named: "Electrical & Electronic"
 5. With either Chemical or Civil Engineering
 6. Named "Electrical & Computer Systems"
 7. Named "Industrial Computer Systems" and "Instrumentation & Control"
 8. Named "Electrical & Aerospace"

9. Includes one named "Sustainable Systems"
10. Includes one named "Coastal Engineering"
11. Named "Product Engineering"
12. Combinations: "Civil & Structural", "Civil & Environmental", "Electrical & Sustainable Energy", "Mechanical & Aerospace", etc.
13. Named "Network & Software Engineering"
14. Includes "Architectural" and "Spatial"
15. Includes "Surveying" and "Geospatial"
16. Includes: "Industrial Chemistry", BEng in Materials Science and Engineering with named majors in Ceramic Engineering, Materials Engineering, Physical Metallurgy and Process Metallurgy
17. Includes "Photovoltaics & Solar Energy"
18. Includes "Bioinformatics"
19. Plus degree combinations: "Civil with Environmental", "Elec & Electronics with Computer Systems", "Mechanical with Mechatronics" and "Mechatronics with Elec & Electronics"
20. Disciplines may be taken in several combinations, and as BEng/MEng dual degrees
21. Includes "Agricultural Engineering"
22. Most Masters degrees are offered as MEng.Sci and MEngPrac – only one recorded per branch
23. Branches also offered with a "Space" option: "Aeronautical/Space" is counted as the second Aero program
24. Includes: "Innovation Engineering", and "General Engineering"
25. Includes "Architectural Engineering"
26. BEng degrees also offered in several dual major combinations.

(b) Offshore (EA weblist January 2020)

ACED member	Civil	Environmental	Chemical	Petroleum	Electrical	Electronic, Comp Syst, Telecoms	Software	Mechanical,	Mechatronics, Robotics
U of Newcastle in Singapore	1B				1B ⁴	1B			1B
U of Wollongong in Dubai	1B				1B	2B		1B	
Monash in Malaysia	1B		1B			1B ⁶	1B	1B	1B
RMIT in Hong Kong in Vietnam	1B				1B 1B	1B, 1M	1B	1B	
Swinburne in Sarawak, Malaysia	1B				1B ⁴			1B	1B
Curtin in Sarawak, Malaysia in Sri Lanka	1B 1B	1B	1B	1B	1B 1B ⁴			1B 1B	

TABLE 17 SUBFIELDS IN ASCED FIELDS OF EDUCATION 03 ENGINEERING AND RELATED TECHNOLOGIES and 02 INFORMATION TECHNOLOGY

03 ENGINEERING AND RELATED TECHNOLOGIES

0301 MANUFACTURING ENGINEERING AND TECHNOLOGY	0309 CIVIL ENGINEERING
030101 Manufacturing Engineering	030901 Construction Engineering
030103 Printing	030903 Structural Engineering
030105 Textile Making	030905 Building Services Engineering
030107 Garment Making	030907 Water and Sanitary Engineering
030109 Footwear Making	030909 Transport Engineering
030111 Wood Machining and Turning	030911 Geotechnical Engineering
030113 Cabinet Making	030913 Ocean Engineering
030115 Furniture Upholstery and Renovation	030999 Civil Engineering, n.e.c.
030117 Furniture Polishing	0311 GEOMATIC ENGINEERING
030199 Manufacturing Engineering and Technology, n.e.c.	031101 Surveying
0303 PROCESS AND RESOURCES ENGINEERING	031103 Mapping Science
030301 Chemical Engineering	031199 Geomatic Engineering, n.e.c.
030303 Mining Engineering	0313 ELECTRICAL & ELECTRONIC ENG'G AND TECHNOLOGY
030305 Materials Engineering	031301 Electrical Engineering
030307 Food Processing Technology	031303 Electronic Engineering
030399 Process and Resources Engineering, n.e.c.	031305 Computer Engineering
0305 AUTOMOTIVE ENGINEERING AND TECHNOLOGY	031307 Communications Technologies
030501 Automotive Engineering	031309 Communications Equip't Installation & Maintenance
030503 Vehicle Mechanics	031311 Powerline Installation and Maintenance
030505 Automotive Electrics and Electronics	031313 Electrical Fitting, Electrical Mechanics
030507 Automotive Vehicle Refinishing	031315 Refrigeration and Air Conditioning Mechanics
030509 Automotive Body Construction	0315 AEROSPACE ENGINEERING AND TECHNOLOGY
030511 Panel Beating	031501 Aerospace Engineering
030513 Upholstery and Vehicle Trimming	031503 Aircraft Maintenance Engineering
030515 Automotive Vehicle Operations	031505 Aircraft Operation
030599 Automotive Engineering and Technology, n.e.c.	031507 Air Traffic Control
0307 INDUSTRIAL ENGINEERING AND TECHNOLOGY	031599 Aerospace Engineering and Technology, n.e.c.
030701 Mechanical Engineering	0317 MARITIME ENGINEERING AND TECHNOLOGY
030703 Industrial Engineering	031701 Maritime Engineering
030705 Toolmaking	031703 Marine Construction
030707 Metal Fitting, Turning and Machining	031705 Marine Craft Operation
030709 Sheetmetal Working	031799 Maritime Engineering and Technology, n.e.c.
030711 Boilermaking and Welding	0399 OTHER ENGINEERING AND RELATED TECHNOLOGIES
030713 Metal Casting and Patternmaking	039901 Environmental Engineering
030715 Precision Metalworking	039903 Biomedical Engineering
030717 Plant and Machine Operations	039905 Fire Technology
030799 Mechanical and Industrial Eng'g and Tech'y, n.e.c.	039907 Rail Operations
	039909 Cleaning
	039999 Engineering and Related Technologies, n.e.c.

02 INFORMATION TECHNOLOGY

0201 COMPUTER SCIENCE	0203 INFORMATION SYSTEMS
020101 Formal Language Theory	020301 Conceptual Modelling
020103 Programming	020303 Database Management
020105 Computational Theory	020305 Systems Analysis and Design
020107 Compiler Construction	020307 Decision Support Systems
020109 Algorithms	020399 Information Systems, n.e.c.
020111 Data Structures	0299 OTHER INFORMATION TECHNOLOGY
020113 Networks and Communications	029901 Security Science
020115 Computer Graphics	029999 Information Technology, n.e.c.
020117 Operating Systems	
020119 Artificial Intelligence	
020199 Computer Science, n.e.c.	

Source: <http://www.abs.gov.au/ausstats/abs@.nsf/0/53B75DFA4C63C20ACA256AAF001FCA6F?opendocument>